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Department of Computer Science and Engineering

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Department of Computer Science and Engineering

B.E. PEOs, POs & PSOs

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

The Program Educational Objectives of undergraduate program in Computer Science & Engineering are to prepare graduates who will:

1. Obtain strong fundamentals concepts, technical competency and problem solving skills to generate innovative solutions to engineering problems.
2. Continuously enhance their skills through training, independent inquiry, professional practices and pursue higher education or research by adapting to rapidly changing technology.
3. Advance in their professional careers including increased technical, multidisciplinary approach and managerial responsibility as well as attainment of leadership positions thus making them competent professionals at global level.
4. Exhibit commitment to ethical practices, societal contributions and lifelong learning.

(A) PROGRAM OUTCOMES(POs)

At the end of the program the students (Engineering Graduates) will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, research literature, and analyse complex engineering problems reachingsubstantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/Development of Solutions:** Design solutions for complex engineering problems and design system componentsor processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal,and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design ofexperiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT toolsincluding prediction and modelling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal,and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal andenvironmental contexts, and demonstrate the knowledge of, and the need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineeringpractice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and inmultidisciplinary settings.

10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and withthe society at large, such as being able to comprehend and write effective reports and design documentation, make effectivepresentations, and give and receive clear instructions

11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and managementprinciples and apply these to one's work, as a member and leader in a team, to manage projects and in multidisciplinaryenvironments.

12. **Life-long learning:**Recognise the need for, and have the preparation and ability to engage in independent and life-longlearning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

13. Demonstrate competence to build effective solutions for computational real-world problems using software and hardware across multi-disciplinary domains.

14. Adapt to current computing trends for meeting the industrial and societal needs through a holistic professional development leading to pioneering careers or entrepreneurship.

M.Tech PEOs, POs & PSOs

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

The Program Educational Objectives of postgraduate program in Computer Science & Engineering are to prepare graduates who will:

1. Gain in-depth knowledge of advanced computational methods, to apply in relevant real-world issues within the context of a specific application domain.

2. Design and develop innovative solutions making use of modern computing platforms by exhibiting commitment to ethical practices and lifelong learning.

3. Understand and contribute to prevalent literature for pursuing research in the field of computer science and engineering.

4. Exhibit technical and managerial skills in multidisciplinary domains andbecome competent professionals.

PROGRAM OUTCOMES(POs)

At the end of the program the students (Engineering Graduates) will be able to:

1. An ability to independently carry out research /investigation and development work to solve practical problems

2. An ability to write and present a substantial technical report/document

3. Students should be able to demonstrate a degree of mastery over computer science and engineering for holistic professional development.

4. An ability to demonstrate understanding for designing and developing software for multidisciplinary problems.

PROGRAM SPECIFIC OUTCOMES (PSOs)

1. Conduct research using knowledge gained to identify and solve problems in multidisciplinary domains.

2. Demonstrate critical thinking ability to propose efficient solutions to the real world computational problems taking into consideration environmental and societal issues

Creative Desk

Dr.AkhilKhare,
Professor,
(Reviewer Technical Magazine)

Dr. B. Sandhya,
Professor,
(Reviewer Technical Magazine)

Meduri. Anupama,
Associate Professor,
(Reviewer Technical Magazine)

Dr. Daggubati. Sirisha,
Assistant Professor,
(Incharge Technical Magazine)

V. Sudhindra,
Assistant Programmer,
(Magazine Design Team)

M. Nagarani,
Programming Assistant,
(Magazine Design Team)

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Chairmen's Message

Dr. K. P. Srinivasa Rao,
MBBS, MS (Ophthalmology),
Chairman, MVSREC

It is often said " Give me a copy of your college Technical Magazine", I will tell you about the quality of your college. "I strongly believe in this statement. Magazine carries the contributions reflecting ethos and aspirations of the faculty, students and other team members of an institution. I am happy to know that Computer Science & Engineering Department is bringing out its first department technical magazine this year. It is my pleasure to congratulate the editorial team for bringing out a quality Technical Magazine. Reading this technical Magazine would definitely be an inspiration and motivation for all students and staff to contribute even more to the forthcoming issues.

Principal's Message

Dr. G. Kanaka Durga,
Principal, MVSREC
(Professor, Department of
Electronics and Communication
Engineering)

TekEssenCSE is the manifestation of the desire of Computer Science Faculty and Students to share their innovative ideas on common platform.   It gives me great pleasure to know that TekEssenCSE college magazine is ready for publication. This magazine is a perfect blend of magnificent and groundbreaking articles. It has concentrated in disseminating information to the student community and quenches their thirst for knowledge updations. I am very glad to congratulate the editor for their hard work and bringing out this edition.

HOD's Message

Prof. J.Prasanna Kumar,
HOD, MVSREC
(Department of Computer
Science and Engineering)

TekEssenCSE is the annual magazine released by the Department of Computer Science & Engineering. It is a blend of exquisite articles and innovative ideas from the faculty and new – age Students of Computer Science & Engineering Department. I strongly believe that the informative articles & innovative ideas presented in the magazine will be appealing and useful to the readers.

Creative Desk

"Coming together is a beginning, keeping together is progress and working together is success" – This magazine "TekEssenCSE", a flag ship magazine of Computer Science & Engineering Department of MaturiVenkataSubba Rao Engineering College, is the culmination of the never tiring initiative and endeavors taken by the faculty and students of CSE. The Magazine strives to inform, engage, inspire and educate diverse readership on developments in Computer Science field.

A Bug By Any Other Name

Meduri Anupama - Associate Professor

Picture this: It's late. A busy 1 a.m. kind of late.

You're tired – or at least your increasingly scratchy eyes think so – and the characters on the screen blur into a rainbow goop.

"Public static void main…" you mutteras you struggle to read through the code flow one more time.

You shake the dreariness from your eyes for one last burst of energy before the pixelated shower overtakes your vision.

Suddenly, you sit up from your chair, the springs screeching so loud it could wake up your neighbors upstairs.

"The function runs into an infinite loop!" you exclaim, clarity washing over.

Your eyebrows furrow.

"Wait, the function runs into an infinite loop?" you question. "Who wrote this buggy code?!?"

If your mind works anything like mine, your next thought isn't to pull out your phone and ping that teammate who can't tell a while loop from a Fireman's coil. It's instead to ask why there even is buggy code.

No, not in a philosophical sense. I mean literally: Why is there such a thing as "buggy code?"

Think about it:Bugs – you know, the many-legged creatures we would much rather not have crawling over us– are littered throughout computer science. There's buggy code, debugging, bug bashing, and bug fixes. Computer enthusiasts are paid by major software companies as part of bug bounty programs. Companies host hackathons to squash bugs (yes, the imagery is intentional). Version control providers like GitHub and Visual Studio Team System have "bugs" as a separate task category and even embellish them with an icon of the creepy crawlers.

What drove computer scientists to obsess over bugs?

The story goes something like this: The date was September 9, 1947. Engineers at Harvard University were testing the Mark II, a bulky electromechanical computing device the size of a room and weighing more than 8,000 kgs.

That night, in the windowlessroom that was the Mark II's home, the machine broke down. Engineers began seeking out the problem. After much investigating, they founda moth smashed into one of the relays.

The team recorded the discovery in a famous logbook entry now stored in the National Museum of American History.

"Relay #70 Panel F (moth) in relay," an engineer wrote. "First actual case of bug found."

The team, which included Grace Hopper, the famous mathematician and computer scientist, later popularized the term "debugging" to mean solving glitches in machinery or programming.More than 70 years later, we even have industry-scale applications called debuggers to help us step through and find the virtual moths in our code.

But the surprise here isn't that dead bugs caused – and still cause – headaches for computer scientists. It's that "bugs" existed long before computers even made an appearance.
The first documented instance in the Oxford English Dictionary of "bug" being used as a metaphor for a logic or machinery glitch was in March 1889. In the Pall Mall Gazette, a sentence read as follows:"Mr. Edison, I was informed, had been up the two previous nights discovering 'a bug' in his phonograph– an expression for solving a difficulty, and implying that some imaginary insect has secreted itself inside and is causing all the trouble."

Yes, that Mr. Edison – the one and only Thomas Edison. The Father of Electricity, according to the Oxford English Dictionary, had animated an insect to personify his tinkering woes. And unless there are records to prove otherwise, he might as well have shaken hands with Grace Hopper to doom future software developers to become well-paid digital bug exterminators.

Of course, today's bugs are more than moths in relays or tricky wire configurations. With the advent of the internet, bugs have turned into costly problems for colleges, universities, companies, and even governments.

In 1988, a bug in a program meant to map the internet ended up tearing through and shutting off thousands of servers, marking the first prominent internet worm. A race condition in power grid management software cut off electricity in 2003 for eastern US states like New York and even the Canadian province of Ontario.

In 2013, Apple's update to the browser Safari included a line that was accidentally copy-pasted twice in a row, opening up users to attacks and spoofs from across the internet. And just as recently as 2017, more than 230,000 machines across 150 countries were encrypted and held as ransom by hackers because of a buffer overflow bug in the Microsoft Server Message Block service. The cost of that last bug: $4 billion, or almost Rs. 29,900crores.

Perhaps this is a sign we should callsoftware mistakes something bigger – something more gargantuan.

Or maybe there is a reason for Edison and Hopper's fascination with small, antenna-driven creatures: They're hard to catch, annoying, and ever-persistent.

That much has remained constant across the centuries of technological advancement. Bugs are a pain in the rear end, a ghastly sight to see at 1 a.m., and often cause us to slap our foreheads in exasperation.

Even if they do sometimes come with an eye-popping price tag.

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Migrate To Sky

Dr. Akhil Khare - Professor

Technology is evolving is at a very fast pace and at equally fast pace business needs are getting change because of multiple business parameter however main reason can be the ever evolving customer demand and business competition.

Multiple approaches may be available at the disposal of any organization to beat the competition and meet customer demand. IT can be one of the approaches available with organization to deliver the required services to its customer. However the challenge will be the usage of existing business critical application effectively and efficiently, so organization may not be able to discard the existing applications (past investment), which is built over a period of time with significant effort, time and cost to address a business requirement on which organization business depends i.e. the legacy application migration can be a way to achieve organization goal/target. As per BusinessDictionary.com; **legacy system** is defined as "Obsolete computer system that may still be in use because its data cannot be changed to newer or standard formats, or its application programs cannot be upgraded" and **legacy application** is defined as "Computer program (typically a database system) which, although critical to an organization's operations, is in an obsolete format or is installed on an obsolete system.

Big question is; what should an organization do with these legacy applications, which they are not able to discard as heavy investment has gone into to build these application over a period of time and these applications are business critical that is that these applications are crucial for the business smooth operation. If due to any reason, an enterprise choose not embrace the new prevalent technology then enterprise may face the multiple challenges such as shortage of skilled manpower, high cost of software maintenance, lack of scalability, business continuity, along with customers experience, enterprise image, etc., which will not be in the interest of enterprise.If an enterprise chooses to embrace the new technology such as cloud, which deliver hardware and software resource as virtualize service than enterprise has three options with respect to their current application in the I

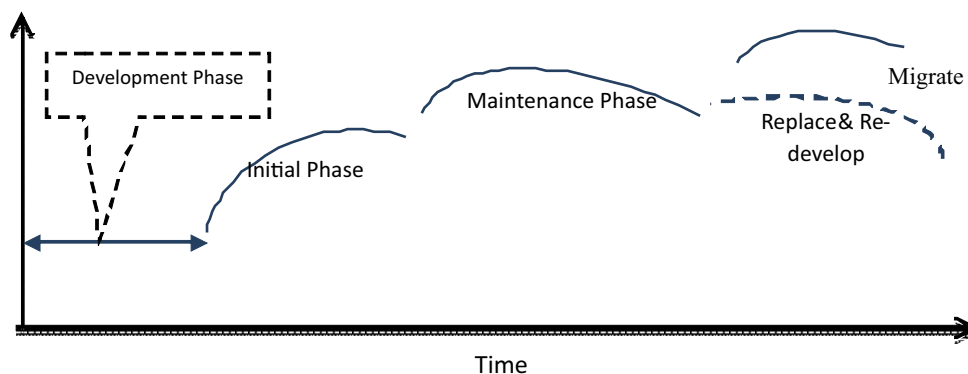

Figure - Legacy Application Modernisation Options

a)   Migrate existing application
b)   Replace existing application with any off-the-shelf application
c)   Re-develop the existing applicationnterest of the enterprise long term goal:

4

Option (b) i.e. replace or option (c) i.e. re-develop option may not be feasible as organization may not like to put in all the effort, time and cost again, when they already have an existing application running, so the only feasible option available with enterprise is to migrate the current application to new technology that is most talked about i.e. Cloud.An enterprise may understand the importance of migrating legacy application to Cloud technology; however the challenge an enterprise faces is an uncertainty of where to begin the legacy application migration process and what need to be done during the migration process. Biggest of all question is will the migration be successful.

## Time Series Feature Extraction (Tsfresh-A Python package)

Dr. D. Sirisha

Abstract :

Time series feature engineering is a time-consuming process because scientists and engineers have to consider the multifarious algorithms of signal processing and time series analysis for identifying and extracting meaningful features from time series. The Python package tsfresh (Time Series Feature Extraction on basis of Scalable Hypothesis tests) accelerates this process by combining 63 time series characterization methods, which by default compute a total of 794 time series features, with feature selection on basis automatically configured hypothesis tests. By identifying statistically significant time series characteristics in an early stage of the data science process, tsfresh closes feedback loops with domain experts and fosters the development of domain specific features early on. The package implements standard APIs of time series and machine learning libraries (e.g. pandas and scikit-learn) and is designed for both exploratory analyses as well as straightforward integration into operational data science applications.

Software Architecture :

Time series feature extraction plays a major role during the early phases of data science projects in order to rapidly extract and explore different time series features and evaluate their statistical significance for predicting the target. The Python package tsfresh supports this process by providing automated time series feature extraction and selection on basis of the FRESH algorithm. By widely deploying pandas. DataFrames, e.g. as input and output objects, and providing scikit-learn compatible transformer classes, tsfresh implements the application programming interfaces of the most popular Python machine learning and data analysis frameworks such as scikit-learn, numpy, pandas, scipy, keras or tensorflow. This enables users to seamlessly integrate tsfresh into complex machine learning systems that rely on state-of-the-art Python data analysis packages.

The feature_extraction submodule (Fig.a) contains both the collection of feature calculators and the logic to apply them efficiently to the time series data. The main public function of this submodule is extract_features. The number and parameters of all extracted features are controlled by a settings dictionary. It can be filled manually, instantiated using one of the predefined objects, or reconstructed from the column names of an existing feature matrix. The feature_selection submodule provides the function select_features, which implements the highly parallel feature selection algorithm. Additionally, tsfresh contains several minor submodules: utilities provides helper functions used all over the package. convenience contains the extract_relevant_features function, which combines the extraction and selection with an additional imputing step in between. transformers enables the usage of tsfresh as part of scikit-learn pipelines. The test suite covers 97% of the code base.
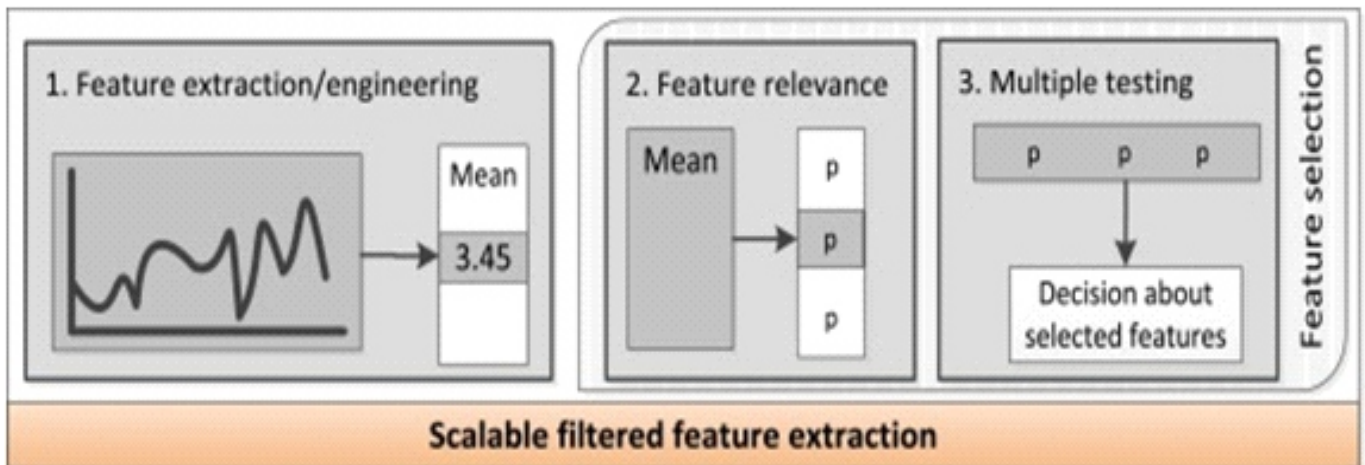
Fig.a 1.Feature extraction 2.calculation of p-values and 3.multiple testing procedure

The feature selection and the calculation of features in tsfresh are parallelized and unnecessary calculations are prevented by calculating groups of similar features and sharing auxiliary results. For example, if multiple features return the coefficients of a fitted autoregressive model (AR), the AR model is only fitted once and shared. Local parallelization is realized on basis of the Python module multiprocessing, which is used both for feature selection and feature extraction. Distributed computing on a cluster is supported on basis of Dask.

The parallelization in the extraction and selection process of the features enables significant runtime improvement. However, the memory temporarily used by the feature calculators quickly adds up in a parallel regime. Hence, the memory consumption of the parallelized calculations can be high, which can make the usage of a high number of processes on machines with low memory infeasible.

Image Inpainting

K.V. Srilakshmi Asharani - Assistant Professor

Introduction :

Inpainting is a conservation process where damaged, deteriorating, or missing parts of an artwork are filled in to present a complete image. Digital image inpainting means virtually painting some regions of an image that appears to be part of original image. Image inpainting was applied on old images in order to remove scratches and enhance damaged images.

Example :

Fig1: Image before and after image inpainting

Now, it is used for removing artifact objects that can be added to the images by filling the target region with estimated values. Image inpainting is also used to remove any type of distortion including text, blocks, noise, scratch, lines or many types of masks. the future, but when the image editors hide their traces using sophisticated techniques, the detection of forgery and the inpainting of image can become difficult. For that reason, almost all detection approaches attempt to handle this by detecting the abnormalities of similarity between blocks of the image that can be affected during the postprocessing operation.
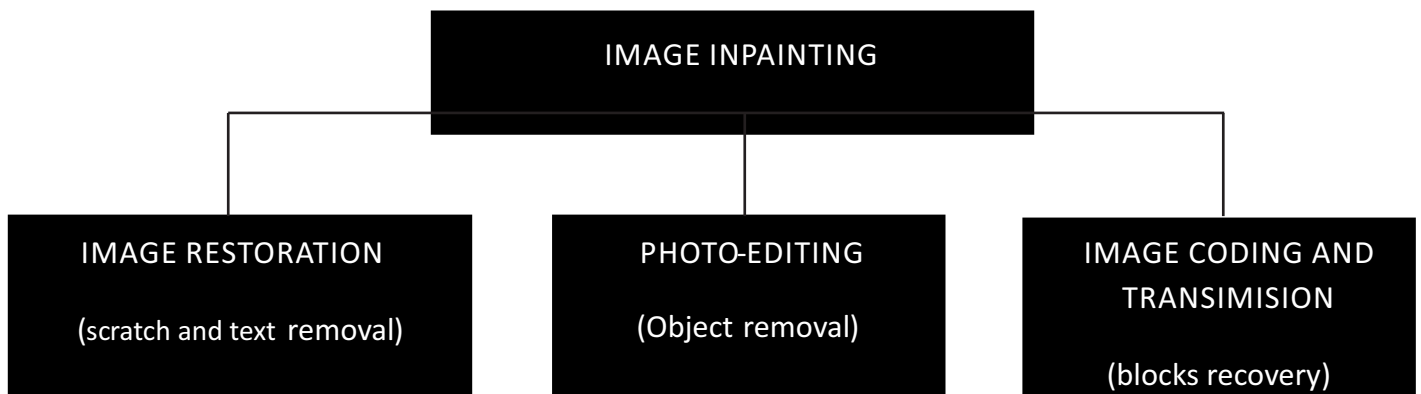

Fig 2: Image inpainting applications and the purposes of each category.

Techniques :

The mostly used in-painting methods are PDE based method, Patch based method and Sparse based method. PDE based method also known as diffusion-based method. Patch based method also known as exemplar-based method.

Different Approaches of Image In painting Techniques

1. Partial Differential Equation (PDE) based
2. Texture synthesis based
3. Exemplar based
4. Hybrid based
5. Semi-automatic and Fast
6. Wavelet transformation based
7. Discrete cosine transform based in painting.

1. Partial Differential Equation (PDE) based image in painting

Partial Differential Equation (PDE) is a differential equation contains one or more variables, relating the values of the function itself and its derivatives of various orders. The algorithm is to continue geometric and photometric information that arrives at theborder of the occluded area into area itself.
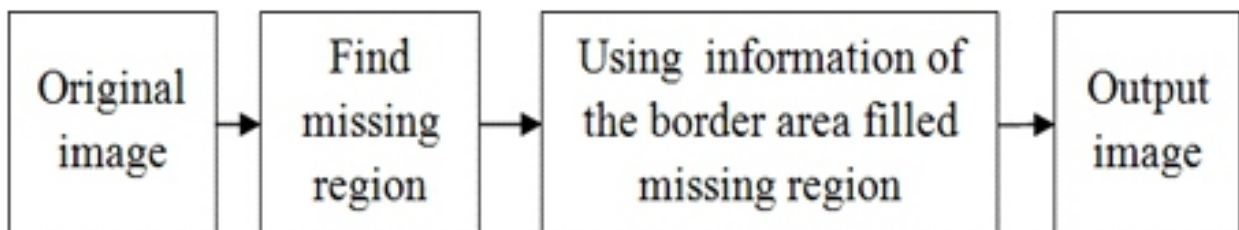
2. Texture synthesis-based image in painting

The main objective of texture synthesis based inpainting is to generate texture patterns, which is similar to a given sample pattern, in such a way that the reproduced texture retains the statistical properties of its root texture.The texture synthesis is based Inpainting perform well in approximating textures. These algorithms have difficulty in handling natural images as they are composed of structures in form of edges. Also, they have complex interaction between structure and texture boundaries.
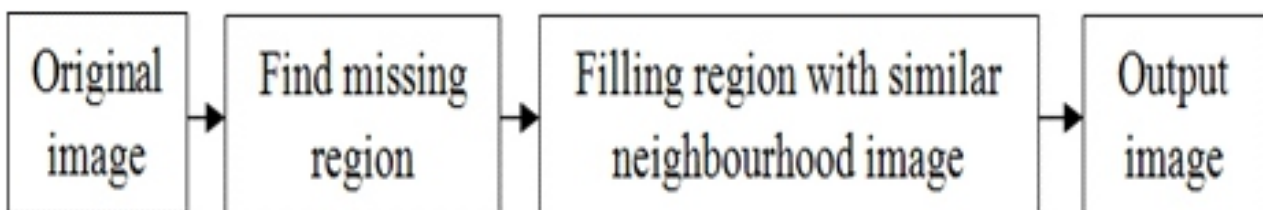
3. Exemplar based imageinpainting

It overcomes the drawback of PDE based inpainting and it is used for reconstructing large target regions. Basically, it consists of two basic steps: priority assignment is the first step and the second step consist of the selection of the best matching patch.The exemplar-based approach samples the best matching patches from the known region and pastes into thetarget patches in the missing region. According to the filling order, the method fills structures in the missing regions using spatial information of neighboring regions. Most of the new exemplar-based algorithms adopt the greedy strategy, so these algorithms suffer from the common problems of the greedy algorithm, being the filling order (namely priority) is very critical.

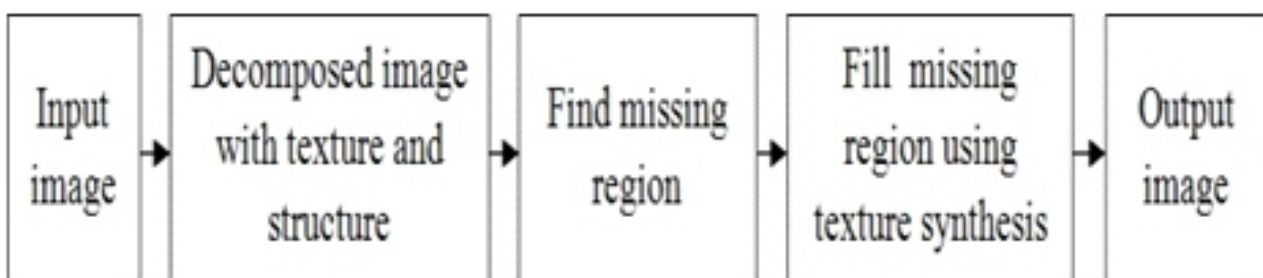| Original image	→	Assign the Priority	→	Best matching patch selected	→	Filling region using exemplar algorithm	→	Output image
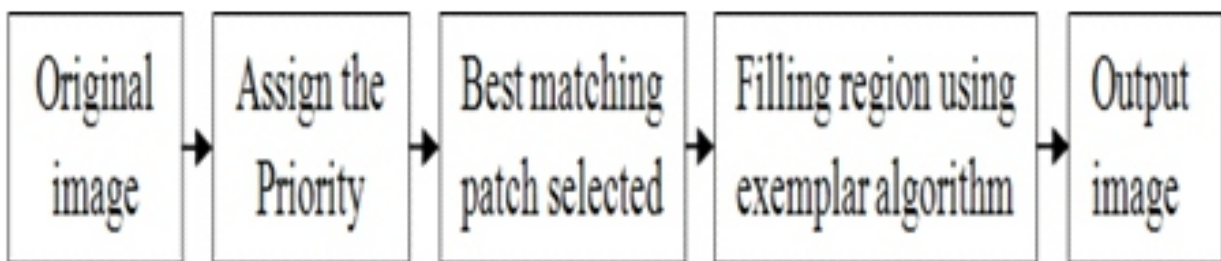
4. Hybrid based imageinpainting

Hybrid inpainting technique is also known as Image Completion. It is used for filling large target (missing) regions. The hybrid approaches combine both texture synthesis and PDE based Inpainting for completing the holes. The main idea behind these approaches is that it decomposed the image into two separate parts, one for Structure region and another for texture regions. The corresponding decomposed regions are filled by edge propagating algorithms and texture synthesis techniques. Structure completion uses two step methods: First a texture-based segmentation on the input image and extrapolating the boundary regions by tensor voting to generate a complete image segmentation and second by using tensor voting missing colors are synthesized. Tensor voting method is goodfor maintaining curvature, but cannot perform well on complex structures and image segmentation of natural images is also a difficult task toperform.

Input image	→	Decomposed image with texture and structure	→	Find missing region	→	Fill missing region using texture synthesis	→	Output image

5. Semi-automatic and Fast image in painting

This perform two-step process. First a user manually specifies important missing information in the hole by sketching object boundaries from the known to the unknown region and then a patch-based texture synthesis is used to generate the texture.   T   h   e missing image patches are synthesized along the user specified curves by formulating the problem as a global optimizationproblemunder various structuraland consistency constraints. Effortless dynamic programming can be used to obtain the optimal reply if only a single curve is in attendance.
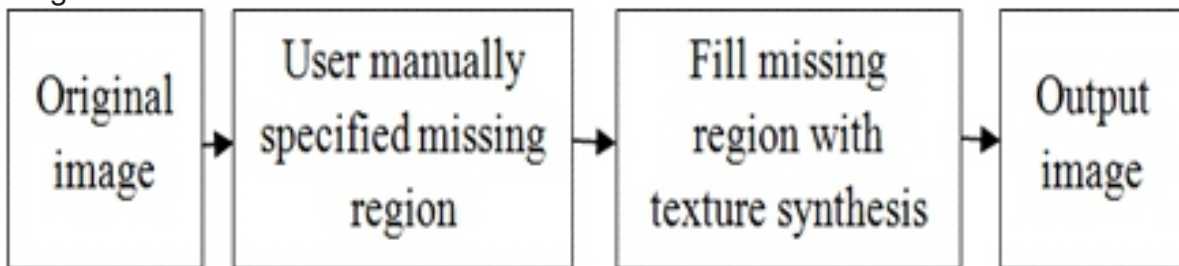
6. Wavelet transformation-based imageinpainting

The algorithm presented the technique with the help of the wavelet transform. Here we expect the best global structure estimation of damaged regions in addition to shape and texture properties. If we consider the fact of multi- resolution analysis, data separation, compaction along with the statistical properties then we have to consider the wavelet transform due to its good image representation quality. Wavelet transform try to satisfy the human visual system (HVS). The algorithm decomposition of incomplete image is done with the help of wavelet and after that wavelet and scaling coefficients is found. The image inpainting processisapplied in the wavelet domain by considering both scaling and wavelet coefficient from coarse to fine scales in the target region. Using this algorithm one benefit is this utilizes inter and intra scale dependency to maintain image structure and texture quality using Wavelet Transform. But difficulties In this algorithm mask for regions are definedmanually.
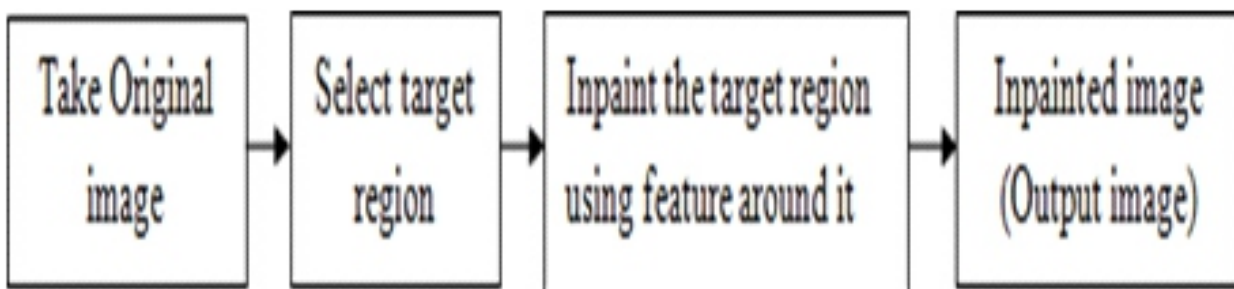
7.   Discrete cosine- transform based In painting

A discrete cosine- transform (DCT) expresses a finite sequence of data points in terms of a sum of cosine functions oscillating at different frequencies. The DCT as an orthogonal transform is used in various applications. DCTs are important to numerous applications in science and engineering,from lossy compression of audio (e.g. MP3)and mages (e.g. JPEG) (where small high-frequency components can be discarded), to spectral methods for the numerical solution of partial differential equations. In particular, a DCT is a Fourier related transform similar to the discrete Fourier transform (DFT), but using only real numbers. DCTs are equivalent to DFTs of roughly twice the length, operating on real data with even symmetry, where in some variants the input and/or output data are shifted by half asample.
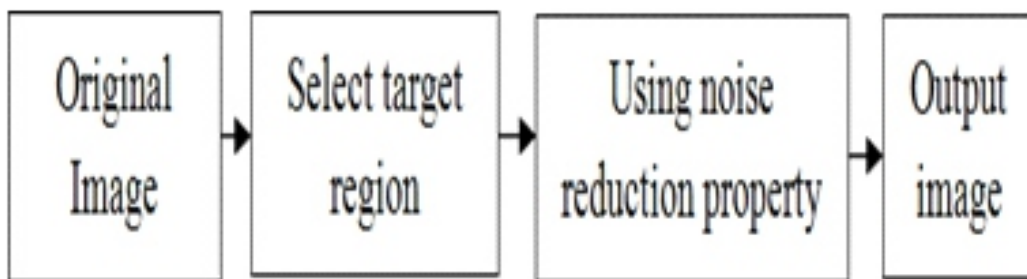
Conclusion

Image inpainting is an important task for computer vision applications, due to largemodified data using images editing tools. From these applications, we can find wirelessimage coding and transmission, image quality enhancement, image restoration and others.In this paper, a brief image inpainting review is performed. Different categories of approacheshave been presented including sequential-based (classical approach without learning), CNN based approach and GAN-based approaches. We also attempt to collect the approaches thathandle different types of distortion in the images such as text, objects added, scratch, andnoise as well as several categories of data like RGB, RGB-D, historical images. A goodalternative to these conventional features is the learned ones, e.g. deep learning, which hasmore generalization ability in more complicated scenarios. To be effective, these modelsneed to be trained on a large amount of data. For that, we collect the most used datasets usedfor training these models. In order to summarize the different analyzed cases and theirperformance, we present a description using tables for each category of methods bypresenting their evaluation performing the types of data, the datasets and the metrics usedfor each approach.As a conclusion, there is no method that can inpaint all the types of distortion in images,but using learning techniques there are some promising results for each category of analyzedcases.

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12. OVERVIEW OF AN IMAGE INPAINTING TECHNIQUES Bansi B. Thanki. International Journal for Technological Research In Engineering

Introduction

Cloud computing is the use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet). The name comes from the common use of a cloud-shaped symbol as an abstraction for the complex infrastructure it contains in system diagrams. Cloud computing entrusts remote services with a user's data,

softwareandcomputation.Cloudcomputingconsistsofhardwareandsoftwareresourcesmade available on the Internet as managed third-party services. These services typically provide access to advanced software applications and high-end networks of server computers.
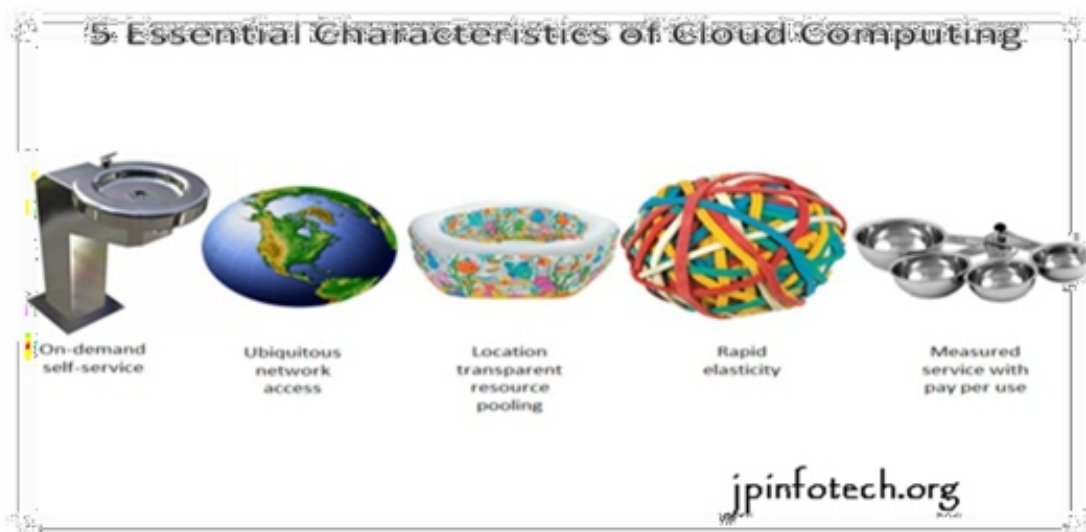

Structure of cloud computing

Characteristics and Services Models:

The salient characteristics of cloud computing based on the definitions provided by the National Institute of Standards and Terminology (NIST) are outlined below:

- ☆ **On-demand self-service:** A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service'sprovider.
- ☆ **Broad network access:** Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, laptops, andPDAs).
- ☆ **Resource pooling:** The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand. There is a sense of location-independence in that the customer generally has no control or knowledge over the exact location of the provided resources but may be able to specify locationat ahigherlevelofabstraction(e.g.,country,state,orDatacentres).Examplesofresources include storage, processing, memory, network bandwidth, and virtualmachines.
- ☆ **Rapidelasticity:** Capabilitiescanberapidlyandelasticallyprovisioned,insomecases automatically, to quickly scale out and rapidly released to quickly scale in. To the consumer, the capabilities available for provisioning often appear to be unlimited and can be purchased in any quantity at anytime.
- ☆ **Measured service:** Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service(e.g.,storage,processing,bandwidth,andactiveuseraccounts).Resourceusage can be managed, controlled, and reported providing transparency for both the provider and consumer of the utilizedservice.

Characteristics Of Cloud Computing

Services Models:

Cloud Computing comprises three different service models, namely Infrastructure-as- a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS). The three service models or layer are completed by an end user layer that encapsulates the end user perspective on cloud services. The model is shown in figure below. If a cloud user accesses services on the infrastructure layer, for instance, she can run her own applications on the resources of a cloud infrastructure and remain responsible for the support, maintenance, and security of these applications herself. If she accesses a service on the application layer, these tasks are normally taken care of by the cloud service provider.
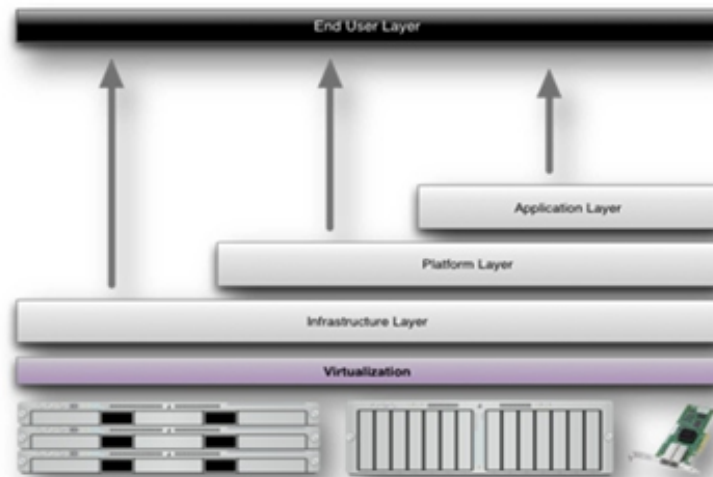
Structure Of Service Models

Conclusion

We proposed the comprehensive requirements in multi-user cloud storage systemsand introduced the model of deduplicatable dynamic PoS. We designed a novel tool called HAT which is an efficient authenticated structure. Based on HAT, we proposed the first practical deduplicatable dynamic PoS scheme called DeyPoS and proved its security in the random oracle model. The theoretical and experimental results show that our DeyPoS implementation is efficient, especially when the file size and the number of the challenged blocks arelarge.

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Abstract

Abstractive text summarization gained popularity due to the popularity of sequence-to-sequence (seq2seq) neural network models. Many improvements have been proposed to seq2seq models, which handles issues, such as fluency and human-like high quality summaries. Almost all the algorithms differ in neural network architecture, parameter inference and summary generation or decoding. In this paper, we provide a detailed literature survey on various approaches to abstractive text summarization, mainly focusing on the latest developments on seq2seq neural network models.

Conclusion

Abstractive summarization is one of the most popular applications of neural network based seq2seq model. It has become prominent research topic, which gained lot of attention from academy as well as industry. In this paper, we gave a literature survey on the latest advances on seq2seq models for abstractive text summarization. The challenges of seq2seq neural network models are encoding long sentences, multi-document abstractive summarization, interpretationof results, and evaluation on different types of text.

Abstract

Security Camera Notifier helps detect any motion (i.e., suspicious activity) happening in the personal room in the user's absence. Nowadays, privacy & security are major concerns. User can install a security camera in the room which helps them to keep their belongings & any other important things safe under surveillance. Unlike other CCTV activities, this process doesn't require 24hrs surveillance. It doesn't require a long list of equipment like big cameras or a big screen (say TV) to watch activities or even a heavy budget. It is simple and easy to install. A stranger wouldn't be able to guess that there's a secret security camera installed in the room. This protocol works when a hidden camera placed in the room detects any motion in the user's time off. A notification is sent to users mobile; the moment the camera detects any kind of motion (say someone entering the room). Here, the user would be provided with '@snap' function, if he/she sends '@snap' then the camera will capture a live picture of that moment and send it to the Smartphone. So, by this process security of the room is assured in user absence.

Conclusion

Through the proposed system, security is extended for personal rooms as it captures a snap or records the moment when the motion is detected in user's absence. It notifies to the Smartphone and also allows the user to have a live image of the room at any moment and hence establishing a two-way communication system. The proposed system can be enhanced by implementing image processing applications such as face recognition so that user gets notified only when a specific person enters the room. The system can also be enhanced by using night vision cameras so that the motion can be detected even in the darkest regions. The proposed system can be collaborated with an alarm setup such that it starts ringing when an unknown person enters the room in user's absence.

Secure Gate Pass System Throughdetect, Vision And Speech System(DVS System)

Dr.H.Jayasree

Abstract

Security check of vehicles, material that get into the organization and that are to be transmitted in various sections usuallytakes place through manual data entry and checking may sometimes leads to errors , is time consuming and requires lot of man -labour. Data entry is manually handled which does not provide proper security to data and data stored on papers is subject to loss dueto physical damage. DVS system (Detect, Vision & Speech) is an automated version of existing Material Gate Pass system. The purpose of this system is to detect a vehicle, generate and scan QR-code on vehicle and produce relevant voice synthesizedinstructions on each operation which is achieved by using a Python Library named PYTTSX (Pyttsx is a cross-platform speech(Mac OSX, Windows, and Linux) library. Voice metadata can be set to age, gender, id, language or name. The speech enginecomes with a large amount of voices. A text-to-speech (TTS) system converts normal language text into speech. As security is amajor concern now a day in every organization, this System facilitate for a smooth entry and exit in the organization withoutdoing any kind of manual checking. DVS System prevents the theft or unauthorized carry.

Conclusion

Noting data in the register is a very laborious work as well as time-consuming. The Material Gate Pass allows you to manage all Incoming and Outgoing items from your office or company. Material Gate Pass is available for use and it is easy to use and manage. This system is defined as a gate pass security system. The system ensure securing company from outside visitors, contractors and the departments, company vehicle security, material, visitor scrap information, contractor. Material Gate Pass helps the organization as well as a visitor to manage the Gate Passes. Frequently Visitors have data entry in top level to make them easily entry and exit. The proposed system reduces the manual effort by doing the whole work automatically using technologies like audacity, tensor flow and QR codes. It is an automated version for the existing gate pass system that simplifies the verification and at the same time improves security.

Singling Out Languages From Text
Dr H Jayashree
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Abstract

Today social networking sites, messengers and applications support various languages to exchange data. Language Identification before machine translation is quite advantageous. The paper is about identifying 6 different languages namely German, English, Spanish, French, Italian and Dutch. It uses Bi-gram language model and bi-gram frequency addition classifier for language identification task. A bigram is an adjacent 2- character portion of a word. A sentence is a group of words with spaces. Spaces are used as an indicator to distinguish start and end of a word. The classifier is trained over the 6 languages as mentioned above. A bi-gram based language model is used to estimate the probability of the occurrence of the next language particle(that is character, word etc) given its previous 2 particles of same type ,by using a maximum likelihood estimation. The resource of the text corpus is Wortschatz Leipzig corpora.

Conclusion

The paper thus identifies 6 different languages namely German, English, Spanish, French, Italian and Dutch from text. It uses Bi-gram language model and bi-gram frequency addition classifier for language identification task. This paper was successful in discriminating 6 languages that act as a boon as all the languages considered are widely spoken and useful across the world. However, differentiating closely related languages like Hindi and Urdu is one of the challenging issues in Language identification. As they present significant lexical and structural overlap, making it challenging for systems to discriminate between them. Apart from language identification from text, similar approaches towards language identification from speech and their accents variation detections could also be considered a future enhancement.

Abstract

The advancement in technology has been exponentially rapid. Computer networks have lead new challenges for the future internet usage in terms of accessibility, bandwidth and dynamic management of networks. Available techniques are not sufficient to tackle the increasing challenges. There is a need for efficient network technology that supports dynamic nature of future Internet applications and network devices. Software Defined Network is the solution to the limitations of the current networks. SDN is a perception which has the potential to change the networks and the way they are designed, built and operated. The goal of SDN is to improve network control by enabling enterprises and service providers to respond quickly to changing business requirements. In this paper we discuss the requirements, architecture and applications of the SDN.

Conclusion

Recent developments in ICT domain such as mobile, multimedia, cloud and big data are demanding for more convenient Internet access, more bandwidth from users, as well as more dynamic management from service providers. SDN is considered as a promising solution to meet these demands. In this paper, we have presented the concept of SDN and highlighted benefits of SDN and its applications.

Data Deduplication Techniques for Big Data Storage Systems

Dr. A. V. Krishna Prasad

Abstract

The enormous growth of digital data, especially the data in unstructured format has brought a tremendous challenge on data analysis as well as the data storage systems which are essentially increasing the cost and performance of the backup systems. The traditional systems do not provide any optimization techniques to keep the duplicated data from being backed up. Deduplication of data has become an essential and financial way of the capacity optimization technique which replaces the redundant data. The following paper reviews the deduplication process, types of deduplication and techniques available for data deduplication. Also, many approaches proposed by various researchers on deduplication in Big data storage systems are studied and compared.

Conclusion

In our study we have compared the various Deduplication approaches and from these we observe that still more challenges need to be addressed. In the future, we will apply k-means clustering for better deduplication in HDFS and also incorporate better storage results. We apply some nature inspired algorithm for achieving an efficient de duplication process.

Abstract

The study focuses on the information flow on twitter during the corona virus outbreak. Tweets related to #coronavirus are studied using sentiment analysis and topic modelling using Latent Dirichlet Allocation post preprocessing. The study concluded that the information flow was accurate and reliable related to corona virus outbreak with minimum misinformation. LDA analysis had identified the most relevant and accurate topics related to corona virus outbreak and sentiment analysis confirmed the prevalence of negative sentiments like fear along with positive sentiments like trust. Governments and Healthcare authorities & institutions effectively utilized to spread accurate and reliable information on twitter.

Conclusion

The study concludes that information flow on twitter related to corona virus outbreak wasrelevant and mostly accurate with minor misinformation being spread. Compared to theearlier Ebola and Zika virus outbreaks where there was misinformation widely spread amongthe twitter users, there has been lesser misinformation spread during corona virus outbreak.Anxiety and panic were evident among the twitter users as the pandemic spread and deathsrise over period of time. But governments and health authorities had also used twitter tospread accurate and reliable information related to outbreaks particularly China government.Negative sentiments dominated the tweet as expected as the virus highly contagious anddeadly which was evident from sentiment analysis. Information spread was quite accurate andreliable and twitter also made sure that misinformation is stopped and deleted immediately.LDA analysis had highlighted that all the topics that are identified from the tweets are mostrelevant information to the corona virus outbreak. Twitter is still considered as one of themost preferred medium for information spread during pandemics and highly effective, isproved again from the current corona virus outbreaks. Governments, Health Authorities andInstitutions like WHO can rely on twitter for spreading information and controlling panicamong public at large.

Multi Keyword Search on Encrypted Text Without Decryption

Vemula Sridhar

Abstract

Various organizations use plain text to store data related to day-today computations. Data is stored in the form of plain text documents without any structure and specifications. Retrieval and searching from structured data will be easier with various existing database systems. Querying and searching on unstructured content is difficult. In general, searching on unstructured content can be implemented using a similarity between input keywords and documents. Organizations are moving towards cloud to store the data because of high availability, lower maintenance cost, reliability, and portability. In a cloud system, sensitive data like personal records are to be protected to avoid malicious access from intruders. But searching data from encrypted content is difficult. In this paper, we are proposing a scheme called Multi Keyword Search on Encrypted text (MKSE) which enables searching on encrypted unstructured textwithout decryption in the cloud using Cosine Similarity. To store the documents, we are using CryptDB database where documents are stored in encrypted form. Thus the multi-keyword search is done on encrypted data in the cloud using cryptDB for providing data security.

Conclusion

In this paper, we proposed a methodology MKSE for single or multi-keyword searchon encrypted text data without decryption. Our approach provides data security by encrypting data at cloud server, makes data always available to retrieve at cloud instance and avoids the risk of data maintenance. With our proposed approach, it is proven that as the word count increases, the performance of the algorithms may not increase beyond five percent. This work can be extended for multi-cloud   environment that leads to high availability of data and fault tolerance of database system.

Effect Of Detector Parameters In Extracting The Feature Points

Dr. D.Sirisha

Abstract

Image registration is the fundamental task used to match two or more partially overlapped images taken, for example, at different times, from different sensors, or from different viewpoints and overlap these images into one image. A feature-based method is developed to register between pairs of visual and LWIR images. Use of images acquired from different sensors such as visual and infrared has become essential for several applications across defense, remote sensing, surveillance etc. Most of these applications need registered visual and infrared images for further processing. Recently proposed multi-modal feature descriptors such as EOH address issues in correspondence estimation between visual and LWIR images, but are limited by the performance of feature detector. In this paper, we have modified the existing EOH descriptor by using the gradient magnitude information along with Gradient Orientation. This approach is experimentally proved to be robust in registering geometrically deformed visual and LWIR images.

Conclusion

Image Registration of Long Wave infrared and visual images is challenging due to the inherent differences in the intensity characteristics of images. Feature Descriptors such as EOH have been proposed to address matching of visual and LWIR images. However such descriptors are not robust to geometric variations like rotation and scale because EOH algorithm calculate the max sobel orientation and saves just the index (type) of the orientation and ignore the value of the gradient. To improve the performance, we have experimented the usage of gradient magnitude along with gradient orientation in descriptor computation. Experiments are carried out on a dataset of IR images with geometric variations. Performance of the modified EOH is compared with standard EOH using objective evaluation measures computed from the ground truth. Results indicate that proposed approach greatly enhances the matching and registration performance of the algorithms.

Formulation of Fractional Affine Feature Detector for TerraSAR-X(TSX) Images

Dr. D.Sirisha

Abstract

The performance of affine invariant feature detector-Hessain Affine on Terra SAR-X images decreases in the presence of speckle noise due to false feature point detections and matches. The owing inherent characteristics of Terra SAR-X images like broad dynamic range and the multiplicative nature of speckle noise, the gradient magnitude is strengthened on homogeneous regions. Hence the false feature point detections on high contrast regions are not suppressed. In order to make feature detection robust towards the speckle noise, the use of improved version of Grunwald-Letnikov (G-L) fractional differential operator in the development of feature detection is investigated. This paved the way for a new affine invariant fractional order feature detector. This detector allows a stable and fine feature point selection without fine tuning parameters of the Hessian Affine feature detector. The algorithm proposed is tested on TerraSAR-X (TSX) images with different look angles. The results show that the proposed Fractional Affine algorithm improves the feature matching performance compared to Hessian Affine algorithm in terms of number of true correspondences and registration accuracy.

Conclusion

This paper formulates a new Hessian- Affine like feature detector adapted to TSX images. It mainly relies on a new edge response computation adapted to TSX images. This new edge response computation procedure, fractional response (FR), is then used to improve the steps of Hessian Affine algorithm. A new feature-point detection method based on improved Grunwald-Letnikov (G-L) fractional differential operator offers robust and repeatable featurepoints. Robust fractional edge response provided by improved GL filter enables to detect more reliable feature points for TSX images than the original Hessian Affine one. With this detector the average number of feature points detected is increased by 28.9% over the Hessian Affine. The average repeatability score is improved from 0.7538 to 0.8794 , inlier ratio increased by 15%, and also the keypoint error is reduced by 26.9%. Experimental results on, Fractional Affine algorithm provides robust and consistent results in terms of repeatability score, inlier ratio and key point error, without the need for fine tuning parameters of the Hessian Affine algorithm. However the proposed detector is not comparably fast, but still very appropriate for tasks requiring high precision and accuracy. Future work will focus on studying the use of fractional order edge descriptor techniques in order to improve the TSX matching percentages.

Multi LevelKeyFrame Selection for Video Summarization

Dr. D. Sirisha

Abstract

Due to exponential growth of video technology there is a huge multimedia content obtainable on the internet the main challenge for user is how to inspect and review rapidly these large multimedia data. Video Summarization is a Technique that permit rapid overview of multimedia data which is widely used in computer vision related applications like video browsing, video retrival system . Video summarization aims to segment the input video to shots and extract the most informative video frames referred as key Frames. In our paper we proposed a new approach for video summarization by introducing BOW and Entropy model for extracting the informative and meaning full summary. Evaluation is done Using VSUMM Dataset by calculating fidelity category using Manhattan Distance between summarized key frames and total number of video frames.

Conclusion

Video summarization is done using entropy in different color spaces and evaluated using fidelity Measure and we observed that in RGB colorspace summarization gives a better fidelity,compared with Lab and HSV colorspace summarizations. Our future work, we focus mainly to improve summarization by using different feature extraction methods and by changing clustering techniques.

Learning Based Image Registration approach using View Synthesis Framework (LIRVS)

D.Sirisha, B.Sandhya, J.Prasanna Kumar

Abstract

Image registration is a fundamental preprocessing step in varied image processing and computer vision applications, which rely on accurate spatial transformation between source and the reference image. Registration using iterative view synthesis algorithm is experimentally shown to solve a wide range of registration problems, albeit at the cost of additional memory and time to be spent on generation of views and feature extraction across all the views. Hence we have approached the problem by building a decision maker model which could predetermine the possibility of registering the given input image pairs and also predict the iteration at which the image pair will be registered. The proposed approach incorporates a decision maker (trained classifier model) into the registration pipeline. In order to ensure that the gain in time is considerable the classifier model is designed using the registration parameters obtained from reference and source image. The trained classifier model can predetermine the possibility of registering the input image pairs and also the minimum number of synthetic views or iteration necessary to register the input image pair. Hence for the images that have been registered, an additional time requirement for the proposed approach is tolerable. However for the images that are not registered the gain in time because of classifier model is extremely significant.

Conclusion

In the proposed approach we have adapted the view synthesis by incorporating a Decision Maker model which helps to predetermine the possibility of registering two images and also predict the iteration at which the image pair will be registered, without actually registering them. It is observed that the average time taken by the Decision Maker is significant compared to the time taken by any other process of image registration such as feature extraction , feature matching and transformation estimation. Hence for the images that have been registered, an additional time requirement for the proposed approach is tolerable. However for the images that are not registered the gain in time because of DM is extremely insignificant. The proposed approach is meant to improve the execution performance (time and space) unlike iterative view synthesis approach. The proposed approach found to be efficient in addressing the extreme geometric deformations, which are not registrable with previous state-of-art. The main drawback of iterative view synthesis approach is, the algorithm is fast for simple registration problems and consume space and time for extremely hard registration problems because generation of synthetic views is done until a valid geometric estimate is achieved. For image pairs which cannot be registered, the iterative approach has to iterate through all the tilts and then conclude that the given image pair could not be registered. This setback is overcome by the proposed algorithm, in our approach the algorithm exits dynamically when a valid geometric estimate is not attained.

Android Malware Detection By Neural Network Using Keras

Venkataramana Battula, T.Lakshmi

Abstract

The use of smart phone is increasing day by day for personal as well as professional purpose. Among them, Android-based mobile devices now are an ideal target for attackers. Android-based smart phone users can get applications for free from Android Application Market. These applications are checked whether they contain any malware that can steal privacy information. In this paper, a detailed process that can detect android malware applications is proposed to help in organizing Android Market. The proposed process intends to detect malware applications and to enhance security and privacy of smart phone users. The system will classify the whether the application is good ware or malware after analyses the features are obtained from the android applications

Conclusion

The usage of smart phone with android operating system increased. Different applications developed different purposes. it is very difficult to find which one has malware. We need a mechanism to detect malware for this we design framework by extracted features i.e. permissions are compared with the complete set of permissions possible for an android application and if the application asks permissions to several common activities then it is declared as a malware application. Thus, one can know whether an application is benign or malware through this process. Also compared accuracies of various classification algorithms before and after feature selection where the percentage of accuracy is high after feature selection in WEKA as well as python. We also experimented that deep learning based classification accuracy is better than conventional machine learning classification.

Metadata of the chapter that will be visualized in Springer Link

M.V.R. Jyothisree

Abstract

The Internet of Things (IoT) is a fast growing technology. In IoT, the devices are connected through the Internet and controlled from any remote areas. Before the advent of IoT, the interaction between the users was only through the internet. By 2020 there will be 75.4 billion devices interconnected through the internet. Machine-to-machine (M2M) interaction is achieved by sending and receiving the information, such as room temperature, humidity etc. IoT can be viewed as heterogeneous networks that bring some security challenges like network privacy problems, confidentiality, integrity and availability. In IoT, we have Routing Protocol for Low-Power and Lossy networks (RPL). RPL is a light weight protocol which has good routing functionality, context aware and supports dynamic topology but has only basic security functionality. This paper elaborates on Routing Protocol for Low Power and Lossy networks (RPL) and its implementation. Along with that, we have surveyed on different RPL attacks in network layer based on confidentiality, integrity and availability. We further conclude with research challenges and future work needed to be done in order to have secure RPL for Internet of Things (IoT).

Conclusion

There are different routing protocols available for communication between the heterogeneous devices. Routing protocol for low power and lossy networks (RPL) is a lightweight protocol having good routing functionality. This paper focuses on the implementation of RPL using Cooja simulator in ContikiOS and also discusses RPL security and different types of attacks in RPL. Our future work is to implement any two attacks in RPL and provide the prevention techniques for these attacks and there by securing RPL.

Feasibility of Soft Real-Time Operations Over WLAN Infrastructure-IndependentIoT Implementation by Enhancing EdgeComputing

Sujanavan Tiruvayipati

Abstract

The subsequent generation of IoT devices must work on a multi-protocol architecture to facilitate M2M communication along with endpoint user interfacing to solve the network infrastructure dependencies accompanied by redundant data flow overhead. An ideological solution is proposed to facilitate a change while cutting down infrastructure cost and enhancing the current setups through proper implementation of edge computation. End devices cooperate with each other along with providing GUI and Internet to handsets; monitoring sensor information as well as issuing control signals.

Conclusion

The suggested solution outperforms the current implementations when there are a smaller amount of requests issued by the user along with architectural constraints over the physical layout of the rooms of a lower depth levels of the embraced tree structure. The existing architectures do have performance gain over the proposed enhancement, but when the cost in addition to maintenance is constraints, then the latter proves to be more feasible and effective. In order to facilitate transformation, the existing system needs to undergo computational enhancement which could be provided as system updates. The feasibility resolution to be brought to soft real-time operations does require proper standardizations and would lead to the betterment of enriching M2M communication techniques as the years pass. These new features if introduced down the line will open up a new world of possibilities by further pushing the research to a greater extent.

Necessity of MANET implementation over Internet of Things: TheFuture of Dynamic Communication among End Devices

SujanavanTiruvayipati, VikramNarayandas

Abstract

Internet of Things (IoT) is yet to be converted into a well-structured, self-configurable, dynamic global infrastructure. IoT focusses interoperable communication protocols where physical things having unique identifications and characteristics that are integrated into the data network. Various practices adopted by organizations in the study of IoTconcentrate more about the working principles rather than enhancing their communication. MANET is a combination of decentralized clusters and hubs which are portable and has many applications in many territories. One fundamental preferred state for a decentralized system is that they are normally more powerful than concentrated centralized systems due to the multi-bounce design in which data is transferred. MANET additionally pursues some downsides in system execution but, it is undeniable that we ought to expect varieties in connections because of no fixed engineering correspondence in IoT. MANET application in IoT will help in proper selfconfiguration of devices for establishing dynamic communication.

Conclusion

One of the significant factors in implementing MANET over IoT frameworks is the possibility of adjusting end device communication channels. Since the IoT framework depends generally on a wide range of remote sensors, MANET conventions center around choosing the most limited and productive ways for data exchanges. Remote system conventions like MANET can't be utilized straightforwardly, there is a need of a composite answer for steering MANET over IoT systems, which can utilize nodes effectively and expand the future research scope.

Practicability Of Embarrassingly Parallel Computations For Enormousminiature Workloads Over Massive Underutilized Iot

Sujanavan Tiruvayipati

Abstract

The Internet of Things (IoT) will grow seamlessly with advancements in data and communication technologies leading to the deployment of trillions of end devices. Its application starts with a simple home automation to a very large scale industrial automation system. The trend is leading towards huge data generation requiring high processing power. In the near future, computing resources might not be sufficient for handling dynamic humongous data production. As the technology advances, microcontrollers or System-onChips (SoCs) used for IoT end devices are becoming cheaper and more powerful. Hence, there is a requirement of effectively making use of huge number of underutilized IoT of the future by allocating additional micro-tasks in parallel which would solve the upcoming needs of the technological trend.

Conclusion

We have demonstrated how the methodology meets the needs of the future data computations of the IoT: the prerequisite of deterministic execution, the necessity of keeping up a solitary programming model to save quick prototyping, lastly the prerequisite of movability. This proposed model demonstrates that it is possible and can be productively actualized. The approach exhibits a simple workload computing scenario which can handle situations of conceivable improvements and different employments of the proposed framework, from coarse grained supercomputing applications running on a great many hubs, to Internet stations. We foresee a few specialized issues while executing a total form of the proposed engineering. The displayed foundation is fundamentally planned to work over the entire internet for IoT. It is likewise usable on a littler scale, and we envision that its underlying usage would be inside vast associations directing their very own intranets. This would enable such associations to utilize their total equipment base all the more proficiently. In the meantime this improves a few of the specialized issues that are not yet comprehended. In our further research, we intend to make our simple engineering increasingly practical and usable with validation instruments.

Feasibility of Soft Real-Time Operations Over WLAN Infrastructure-IndependentIoT Implementation by Enhancing EdgeComputing

Sujanavan Tiruvayipati

Abstract

IoT administrations are ordinarily conveyed of IoT as physically disconnected vertical arrangements, in which all framework segments running from tangible gadgets to applications are firmly coupled for the prerequisites of each explicit venture. The productivity and versatility of such administration conveyance are naturally constrained, presenting noteworthy difficulties to IoT arrangement developers. In thiscontext, we propose a novel SaaS structure that gives basic stage administrations to IoT arrangement suppliers to productively convey and constantly expand their administrations for DIY applications over HTTP with no investment required. This paper initially presents the IoTSaaS engineering, on which IoT arrangements can be conveyed as virtual verticals by utilizing figuring assets and middleware benefits onfree cloud services. At that point we present the itemized instrument, usage of area intervention, which helps arrangement suppliers to productively give area explicit control applications by designing their own SaaS for IoT. The proposed methodologies are exhibited through the implementation of a sample experiment for building the need. A prototype proposed method is discussed in this paper.

Conclusion

This paper proposed IoT SaaS—a novel cloud approach that underpins effective and adaptable IoT administration customization using freely available services. On the cloud IoT services arrangement suppliers can effectively convey new customizations by utilizing assets and administrations, for example, space intervention; application setting the board and metering on cloud. The area goes between an extensible system for IoT SaaS to connect with different domain specific information models and give control applications that depend on physical gadgets, building the executives and two control applications are customizable to exhibit required DIY component. The proposed engineering and reference execution is by and large additionally formed into a mechanical evaluation IoT cloud over HTTP. In the meantime, the future research can take a shot at the IoT SaaS will be led in two ways. First is to assess and show the asset utilization of IoT applications so as to successfully allot processing assets on the multi-occupant IoT administration stage. The application oriented asset model will think about gadget conduct, physical setting of utilizations, information handling prerequisites and use of designs. Second is to explore an individual cloud space for high availability and performance of IoT devices and cloud conditions.

Image Similarity With Cosine Distance

C. Siva Jyothi, B. Sandhya

Abstract

Image similarity, is the process of identifying correspondences between same scene images that differ due to different acquisition parameters(illumination, view point, multi modal) or noise(ex: blur). Image patch matching gives two patches as input to a deep neural network, find similarity between them. Our objective is to design a convolution neural network that classifies image patches by finding similarities between images of same scene. Similarities of images are measured from the feature maps that are extracted from raw patches. A model is developed that maps the patch to low-dimensional feature vector and distance is calculated using cosine distance. Threshold is applied on the similarity distance resulting '1' for similar patches and '0' for dis-similar patches. The results are collected by training the model with Hpatches dataset and evaluating the model with HPatches dataset. Promising results of Mean Absolute Error has been shown.

Conclusion

In this paper we design a deep neural network that compares raw image patches of same scene images and learn general similarity function for patches. A study has been performed on different network architectures resulting best   performance on Siamese CNN with predicted similarity score as output. In training process we utilize matching of similar and dis-similar pairs of HPatches dataset with photometric c changes on homography resulted best. Also the metric terms used are concentrated on reducing the mean absolute error. By increasing more training set, potential increase in overall performance.

Blockchain Implementation for the Mutual Fund RTA

Vijaya Killu Manda1 , Vedavathi Katneni2 , Satya Prakash Yamijala3

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Abstract

Registrar and Transfer Agents (RTA or R&T Agents) are important financial intermediaries in the investment asset management industry who can use blockchain technology in their financial transaction record keeping and investor (customer) service activities. This paper examines the operational, banking, financial and non-financial transactions of an RTA for possible cost and process optimization with a blockchain implementation. Enterprise Ethereum Alliance (EEA) standards are considered so that the system is enterprise-grade, scalable and plugs with other vendor systems. It is found that the on-chain and off-chain features of the blockchain can help in document man`agement as well as optimal resources of the RTA.

Conclusion

RTAs provide record keeping and investor support services and are vital financial intermediaries in the mf industry. Various features of the Blockchain technology, particularly the Enterprise Ethereum, can help RTAs to migrate to the Blockchain so that process optimization and cost cutting can be done. The services of EEA (such as the architectural framework and the layered approach) can help in bringing about standards in the blockchain industry and help derive long term benefits because of easy inter-operability with multiple vendors. Moving transactions and storage offchain can reduce some burden and improve throughput of the blockchain network as well as in optimal system resource utilization.

Segmentation And Recognition Of English Text

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Guide - Dr. Sesham Anand, Professor

Abstract

These days there is a huge demand in storing the information available in paper documents into a computer, storage disk and then later reusing this information by searching process. One simple way to store information from these paper documents in to computer system is to first scan the documents and then store them as images. But to reuse this information it is very difficult to read the individual contents and searching the contents form these documents lineby-line and word-by-word. This poses an inconvenience because the image is not searchable or editable. Even when we want to convert scanned images directly into pdf, they are not in editable or searchable format. Thus, we need tools to convert these documents into editable forms. Hence, recognition of texts from printed/typed text images is an important task. The aim of this project was to make an application which would be capable of identifying and recognizing English typed text from an image(.jpg, .jpeg, .png) and convert it to an editable format(.txt ,etc) so that it can be directly modified without the need for typing the text document again manually. Optical character recognition is one of the popular techniques used for recognizing texts. It is a technique that is used to convert scanned images of printed text into character streams that can be read by machines and then can be edited for further functionalities. The project involves the implementation of Image Processing techniques and Machine Learning Algorithms. Document segmentation is the process of dividing a document (printed text) into its base components (lines, words, characters). Once the zones (text and non-text) have been identified, the segmentation of the text elements can begin. Several challengessuch as touching, broken line segmentation, or overlapping text lines exist which need to be minimized in order to segment the elements correctly.

Conclusion

This project has mostly been focused on the machine learning methods used in the project. At first, we reviewed the approaches that are nowadays used in similar applications. After that, we delved into the inner workings of a multilayer perceptron, focusing on backpropagation and Stochastic gradient descent learning algorithm, which has been implemented and developed Desktop application. With the knowledge we had described, we specified the requirements of the project and planned an algorithm which cleans up the background and binaries the detected text is applied to extract the text from the regions enclosed by the bounding boxes in the input image and send to methodology that assists the recognition of english text over a wide range of font styles is presented with accuracy 96(approx.). The system is stable and robust all the system parameters remain the same throughout all the experiments.

Object Detection And Recognition For Visually Impaired

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Guide - V Satish, Assistant Professor

Abstract

Object Detection is a computer technology, important in the advancement of computer vision systems and image processing that deals with detecting instances of semantic objects of a certain class in digital images and videos. For the blind, it is very essential to recognize a product of their daily use, so we implied a method to identify product in their everyday routine. There are many electronic devices for the visually impaired but few actually get used on a daily basis. The network is trained on the most challenging publicly available dataset (COCO). This project aims to incorporate deep learning techniques for object detection and converting into speech with the goal of assisting the visually impaired people. Google's gTTS is used for Text-To-Speech Conversion

Conclusion

detection is a key ability for most computer and robot vision system. Although great progress has been observed in the last years, and some existing techniques are now part of many consumer electronics (e.g., face detection for autofocus in smartphones, face mask detector in time of COVID-19) or have been integrated in assistant driving technologies, we are still far from achieving humanlevel performance, in particular in terms of open-world learning. In this project, we investigate the need from blind and visually impaired people. Based on the impetus of the CNN, we develop a blind visualization system that helps blind people better explore the surrounding environment. Through this project, we hope to demonstrate the possibility of using computer vision techniques as a type of assistive technology. The future scope of the project determines to recognize multiple objects in a view with better accuracy and less detection time. The extension of this system identifies any kind of entity with faster frame rate.

Online Signature Verifcation

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Guide - K Murali Krishna, Assistant Professor

Abstract

In this project, we try to provide an optimal solution for verifying online signatures using machine learning, particularly deep learning. We have implemented 42 features which can be fed into the neural network to identify the minute differences between genuine signatures and forged signatures of 40 users from the SVC2004 dataset. We have developed two Deep Learning models, one to identify users and the other to classify whether the signature is genuine or forged. These models can be used in real-time to detect forged signatures efficiently and effortlessly with cutting edge technologies, like Deep Learning, with an accuracy of 97% i.e. model 1 - 99% and model 2 - 98% accuracy on unseen data. These models, with over 42 million parameters, can be directly used through a web app interface built with Flask, a Python web framework. This web application is hosted on Amazon Web Services platform using NGINX server and Gunicorn WSGI. This enables the users to use pre-trained deep learning models for signature verification in a stable production grade environment without concerning the end user with all the intricacies of using a state-of-the-arttechnology. This server configuration can handle multiple requests simultaneously and has capabilities like caching and load balancing. Keywords: SVC2004, Signature Verification, Deep Learning Models, Neural Networks, AWS, NGINX

Conclusion

In this project, we have developed a signature verification application which can verify signatures accurately with 97% accuracy for up to 40 users. The web application is hosted on a server built with NGINX which is known for its performance and stability.

Vulnerability Assessment And Penetration Testing

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Abstract

Complexity of systems are increasing day by day. This leads to more and more vulnerabilities in Systems. Attackers use these vulnerabilities to exploit the victim's system. It is better to find out these vulnerabilities in advance before attacker do. The power of Vulnerability assessment is usually underestimated. While Vulnerability Assessment and Penetration Testing can be used as a cyber-defence technology to provide proactive cyber defence. Penetration testing is the art of finding vulnerabilities and digging deep to find out how much a target can be compromised, in case of a legitimate attack. A penetration test will involve exploiting the network, servers, computers, firewalls, etc., to uncover vulnerabilities and highlight the practical risks involved with the identified vulnerabilities. Our project demonstrates Analyzing and Prioritizing the Vulnerabilities, Exploitation, Payload deployment and different kinds of attacks such as Phishing, ARP Spoofing, DNS Cache Poisoning, Removing HTTPS Encryption.

Conclusion

The proposed different vulnerability assessment and penetration testing modules are successfully executed using different tools on different platforms. The methods to prevent and defend against these attacks are also proposed. Now a days in this modern world, everyone is using different electronic gadgets and the more the devices increases the more hacking techniques are possible on those devices. Hence, we have shown some of the different penetration testing methods to get access to different devices and different networks. This helps us to know about different hacking techniques available on different devices and as our awareness increases we can easily protect ourselves in this tech world. All the demonstrated penetration testing attacks can be easily avoided or defended if we stay a little bit careful , Hence we also shown how to defend against all the penetration testing attacks

Real Time Object Detection For Security Monitoring And A Comparative Study Of Algorithms

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Abstract

With the advancement in Deep Learning (DL) in the past few years, we are able to create complex ML models for detecting objects in images, regardless of the characteristics of the objects to be detected. This development has enabled engineers to replace existing heuristics-based systems in favor of ML models with superior performance. As people and organizations tend to use low processing capacity devices such as mobile phones and CCTV cameras for day to day use to a larger extent, and also expect increasingly advanced performance from them, the industry needs to adopt more advanced technologies to meet up to expectations. One such adaptation could be the use of a combination of existing models to detect objects, i.e. SSD MOBILENET. Along with implementing the same for faster object detection in low capacity systems, we did a comparison between different algorithms to support our project.

Conclusion

We believe that this kind of an application has the capacity to bring a change in the security systems with fewer expenses and less number of resources. In addition to this, the same implementation can be used in varied aspects such as online shopping, number plate detection in traffic, etc. After comparing different algorithms, it can fairly be concluded that SSDMobileNET has a fairly higher accuracy/speed ratio that makes it desirable for applications such as these. In addition to that, there is always a scope of improving the accuracy factor, not compromising on the speed, with better training. This application in future can be used in larger areas like schools, banks etc. with improvements in the model.

Implementation Of Grover's Algorithm Using A Quantum Computing Simulator

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Abstract

To develop a Quantum Computing Circuit on IBM-Q and Q# (pronounced Q sharp) that can perform grover's algorithm for using it to be efficient for unstructured data search to be better optimized. This project utilizes reverse logic gates such as the hadamard and pauli gates, etc. The grover's algorithm is a quantum algorithm devised in the 1990's in a theoretical way but its implementation has started only with the inception of functional quantum computers. We leverage the Quantum Properties such as Super-Position and Entanglement of atom sized particle and apply Quantum Logic Gates to perform computation in a simulation. Quantum Computing and the algorithms designed to run on Quantum Computers especially Grover's Algorithm solves the Non-polynomial Deterministic time problems in Polynomial time. Grover's algorithm is the fastest algorithm known to tackle the problem of unstructured search. The algorithm was developed at Bell Labs. To implement Grover's algorithm is to design a Quantum circuit by writing code in Quantum programing Language.

Conclusion

We aspire to implement the Grover's Algorithm using more than just 5 Qubits, we have written a Java Code that would automate the Generation of the entire Q# file required to implement the Oracles and the Grover's Iterator. For example, we have tried to implement Java code [Appendix C] to generate the Q# program for 10 Qubit and the output required astronomical resources to run, although the Java Code was around 190 lines the number of lines generated by the java code was around Seven Million, This created a hurdle for us to implement on current machines in our possession.

Facial Emotional Recognition Using Deep Convolutional Neural Networks

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Guide – B.Saritha, Associate Professor

Abstract

Face depicts a wide range of information about identity, age, sex, race as well as emotional and mental state. Facial expressions play crucial role in social interactions and commonly used in the behavioural interpretation of emotions. Automatic facial expression recognition is one of the interesting and challenging problems in computer vision due to its potential applications such as Human Computer Interaction (HCI), behavioural science, video games etc. Our Facial Emotion Recognition system performs detection and location of faces in a cluttered scene, facial feature extraction, and facial expression classification. A number of different models were experimented with, including decision trees and neural networks before arriving at a final Convolutional Neural Network (CNN) model. CNNs work better for image recognition tasks since they are able to capture spacial features of the inputs due to their large number of filters. After observing unbelievable performance with deep learning models, we used deep convolutional features to better represent the given image instead of using the traditional handcrafted features. We have developed a Deep Convolutional Neural Network for classifying human emotions from dynamic facial expressions in real time. We used transfer learning on the fully connected layers of an existing convolutional neural network which was pre-trained for human emotion classification. Kaggle's FER-2013 dataset with seven facial emotions labels as happy, sad, surprise, fear, anger, disgust, and neutral is used to train the model. An overall training accuracy of 92.86% and test accuracy of 64.42% are achieved. Finally, a live video stream connected to a face detector feeds images to the neural network. The network subsequently classifies an arbitrary number of faces per image simultaneously in real time, wherein appropriate emotions are displayed over the subject's faces and their probabilities are displayed over a real time bar graph on a separate window.

Conclusion

This project proposes an approach for recognizing the category of facial expressions. In this project, images of seven different facial expressions from FER dataset have been analyzed. Face Detection and Extraction of expressions from facial images is useful in many applications, such as robotics vision, video surveillance, digital cameras, security and human-computer interaction. This project's objective was to develop a facial expression recognition system implementing the computer visions and enhancing the advanced feature extraction and classification in face expression recognition. Experiment results on the FER dataset show that our proposed method can achieve a good performance. Facial expression recognition is a very challenging problem. More efforts should be made to improve the classification performance for important applications. With this technology, a recruiter will be able to know, say, the overall confidence level of an interviewee and make a decision about whether or not this candidate will be able to perform well at a client-facing job. Similarly, it will be possible to find whether the candidate is honestly replying to all the questions by measuring the change in emotions during his responses and correlating it the vast amount of knowledge available in this area. Our future work will focus on improving the performance of the system and deriving more appropriate classifications which may be useful in many real world applications.

Brain Tumor Detection Using Deep Learning Techniques

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Abstract

A major challenge in brain tumor treatment planning and quantitative evaluation is determination of the tumor extent. The noninvasive magnetic resonance imaging (MRI) technique has emerged as a front-line diagnostic tool for brain tumors without ionizing radiation. Manual segmentation of brain tumor extent from 3D MRI volumes is a very time-consuming task and the performance is highly relied on operator's experience. In this context, a reliable fully automatic segmentation method for the brain tumor segmentation is necessary for an efficient measurement of the tumor extent. In this study, we propose a fully automatic method for brain tumor segmentation, which is developed using U-Net based deep convolutional networks. Our method was evaluated on Multimodal Brain Tumor Image Segmentation (BRATS 2019) datasets, which contain 220 high-grade brain tumor and 54 lowgrade tumor cases. Cross-validation has shown that our method can obtain promising segmentation efficiently

Conclusion

We developed a fully automatic brain tumor detection and segmentation method using the U-Net based deep convolutional networks. Based on the experiments on a well-established benchmarking (BRATS 2019) datasets, which contain both HGG and LGG patients, we have demonstrated that our method can provide both efficient and robust segmentation compared to the manual delineated ground truth. In addition, compared to other state-of-the-art methods, our U-Net based deep convolution networks can also achieve comparable results for the complete tumor regions, and superior results for the core tumor regions. In our current study, the validation has been carried out using a five-fold cross-validation scheme; however, we can envisage a straightforward application on an independent testing datasets and further applications for multiinstitutional and longitudinal datasets. The proposed method makes it possible to generate a patient-specific brain tumor segmentation model without manual interference, and this potentially enables objective lesion assessment for clinical tasks such as diagnosis, treatment planning and patient monitoring.

Detection Of Natural Disasters Using Keras

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Abstract

Natural disaster is a sudden and terrible event in nature such as Cyclone, Earthquake, Wildfire, Floods, landslides etc. which negatively affects society, either through property damage or loss of life. Strategies for their management ought to deal with existing hot spots and also with potential new ones, by predicting their behavior, volume and severity prior to their occurrence. In this scenario, prevention and preparedness is better than recovery. So, automating disaster prediction will be very helpful to reduce loss. Our project is predicting three different classes of disasters(Cyclone, Wildfire, Floods) using Machine learning. Our main objective is to examine the possibility of automating the process of disaster susceptibility mapping by using machine learning techniques. There are algorithms that learn from the available data in order to perform processing tasks such as classification, prediction or clustering. Machine can reach the expectations only by giving required training examples. For better accuracy, we will provide the required training examples for the machine to learn and get into the scenario, which would perform prediction task in real time.

Conclusion

The proposed real-time calamity detection system can be used to detect disaster and generate an alert automatically. This system can be used for two different purposes. First, to process satellite images to predict and warn cyclone and forest fire. Second, to process satellite images for quick detection of affected regions during natural calamities like flood. This idea can be used to predict the disaster through a satellite camera. It dramatically reduces human effort and time to analyze the satellite image for any type of disaster. Therefore, the proposed system can be used as a 'eyes in the sky' and can help the research community to predict disaster in advance and to optimize the damages during natural calamities. This natural disaster detector is developed by utilizing a number of important deep learning techniques. Fine-tuning a Convolutional Neural Network(VGG16) that was trained on ImageNet. By fine-tuning, the network will be able to predict which it is not there for. So fine tuning increased the productivity. Using a Keras Learning Rate Finder, Optimized learning rate is found in order to get minimum loss value. Implementing the Cyclical Learning Rate callback into our training process to improve model accuracy. Performing video classification with a rolling frame classification average approach. Natural disasters are detected by looking at the sequence of frames which is better than detecting by looking at single frame. So by rolling average mean approach, mean of decisions is taken depending on the queue size, and label with highest probability will be taken. After training the model, input is taken as images or videos. Accordingly they are classified into different classes of natural disasters. User can give the input either in the form of image or video. If input is image, then the image frame is taken directly and prediction will be done. If the video is given, the video is taken frame by frame sequentially and prediction will be done by using rolling average mean approach for better results.

Accent Recognition Framework using Co-Training Algorithm

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Abstract

Accented speech from speakers of various languages imposes a challenge to speech recognition because accented speech tends to result in phones that are atypical. Accent classification can enhance the automatic speech recognition system by identifying the ethnicity of a speaker and switching to a speech recognition system that is trained for that particular accent. In this project, we attempt to strengthen the solutions for this problem by classifying accented voice clips of three types of English speakers i.e., Indian, Chinese and North American. The purpose of this project is to explore and examine different features, and algorithmic techniques for the purpose of voice accent recognition and classification. It tries to see if a good accent classifier can be built when starting with only a small amount of labeled data. The co-training algorithm is used to accomplish this. It can be determined if performing the co-training algorithm with a small amount of data can approach the accuracy rate given by training classifiers on a large amount of labeled data.

Conclusion

It is well-known that the MFCC is a suitable feature for accent classification from previous work. It is shown though, that the Chromagram can be used to train better-than-chance classifiers, and is therefore a potential candidate to be a complementary feature for future accent classification systems. Here it is demonstrated intriguing exploratory results for utilizing MFCC and Chroma features to implement the co-training algorithm on small amounts of labeled accent data, especially in the case of binary classification, where the accuracies of our classifiers trended upward with the number of co-training iterations. It was also analyzed the misclassification rate, and cases of disagreement between the classifiers used in co-training to understand which of the used accents were hardest to distinguish from one another, as well as which classifiers performed best at predicting each class. Future work on this topic could include implementing the proposed strategy of handling labeling disagreements, as well as determining if similar analysis of classifier disagreements could be generalized to other co-training implementations. Work could also be done to determine the optimal tunings of the co-training algorithm to achieve desirable results in the accent classification domain i.e. number of samples labeled per iteration, size of the starting labeled and unlabeled data sets, etc. One could also simply run the co-training algorithm for a greater number of iterations to more fully understand the effect of the co-training algorithm on proposed classifiers, as well as attempt to find other more suitable features for co-training in the accent classification domain than MFCC and Chroma.

Fleet Tracking Using Raspberry PI

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Abstract

Survival in today's urban world cannot be imagined without proper means of transportation. One of the major form of such transportation is the use of vehicles such as cars, buses etc. Considering vehicles, a catastrophic situation in today's world is not merely impossible, So there is always an urgent need to arrange appropriate measures to ensure the safety, security as well as monitor the vehicles to avoid any mishap. This unlimited need of security leads us to the Fleet asset tracking systems which are a trend now-a-days for the sake safety and resource optimization. The Fleet tracking Systems are an extended version of the basic vehicle tracking systems. This project intends in capturing the complete vehicle diagnostics such as the speed of the vehicle, last location of the vehicle, engine temperature, gas level of the vehicle An efficient fleet tracking system is being designed and implemented for tracking the movements and the basic measurements required for the vehicle security. The proposed system makes good use of the popular technologies such as microcontrollers and web based applications. The designed in-vehicle device works using the Global Positioning System(GPS) which is used for the current location of the vehicle. The Fleet tracking system uses the GPS to get the geographic coordinates at regular time intervals. There is an infused DC motor which will help us by providing the speed of the vehicle which is under constant monitoring which when exceeds a particular value will auto-send a message to the registered mobile using the Global System for Mobile Communication /Global Packet Radio Service(GSM/GPRS). The above components are included with two other sensors, namely the temperature sensor and the gas sensor to get the engine temperature and the gas level in the vehicle. All the above mentioned hardware components are going to be supported and confined to the Raspberry pi microcontroller. The additional feature to the fleet tracking system is the accident detection of the vehicle which will be done by the limiting switch when the vehicle has met with an accident an auto-alert is sent to the specified mobile along with the location where the incident has taken place. In order to show the effectiveness of the system, this project presents experimental results of the fleet tracking system and some experiences on practical implementations.

Conclusion

IOT is one of the major domains where applications will keep on showing up in the future. The need of high level security and safety has become one the major concerns in today's world. This project will provide that need of security and safety of not only the vehicle but also the passengers through the Accident alert system. This project makes use of the latest technologies of IOT and microcontroller. This consists of a heavy hardware components along with the programs to run the hardware coded in python. This project has a wide range of applications in every field which lead to the massive demand for such devices.

Image Similarity Using Unsupervised Deep Nets

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Abstract

Image similarity is the measure of how similar the given images are by quantifying the degree of similarity. Adopting a strategy of self-supervision, a deep net is trained to calculate the similarity between the referenced image and the training data. A model is trained with various images from the given dataset and the output will be the prediction of all the similar images to the referenced image in the query, in the decreasing order of similarity. Convolution Autoencoder neural network whose aim is to learn representation for a set of data by training the model to ignore signal "noise" is used. Unsupervised learning of visual similarities is of paramount importance as annotating the fine-grained similarities between the images is time consuming in particular for the large-scale data sets typically used for training CNN's.

Conclusion

We were successful in achieving a framework of robust unsupervised learning with Autoencoders for matching of images that combined convolution neural network with an Autoencoder. The output of the network was successfully able to retrieve all the similar images on the basis of the similarity metric between the images.

Self-Driving RC Car Using Opencv And Tensorflow

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Abstract

Image processing is manipulating an image to enhance it or extract information from it. Today, image processing widely used in medical visualization, biometrics, self-driving vehicles, gaming, surveillance, and law enforcement. Here are some of the primary purposes of image processing: Visualization, Image sharpening, and restoration, Image retrieval, Object measurement, Pattern recognition. We train the machines to see and interpret images in the way required for a particular task with the help of deep learning algorithms and neural networks. Our project, "Self Driving RC Car using OpenCV and Tensorflow," is a prototype that demonstrates how a car detects the path that is specified by the user. Here, AI plays a crucial role; its deep learning, neural networks algorithms are being used for image detection, path detection to provide the necessary control to the car. The car runs on Raspberry Pi as a processing unit. A camera is attached to the model that helps in collecting the images and obstacles on its way. It acts as a backend tool for voiding possibilities of accidents, and other human errors could be rectified/minimizes. The Software component comprises of Python language aided with the Tensor flow, Keras and OpenCV. Tensor Flow is a symbolic math library and used for machine learning applications such as neural networks. Keras is a high-level neural networks API, written in Python, and capable of running on top of Tensor Flow. OpenCV-Python is a library of Python bindings designed to solve computer vision problems; it makes use of Numpy, which is a highly optimized library for numerical operations with a MATLAB-style syntax.

Conclusion

To summarize our project, we have built an autonomous robocar- which follows the lane and navigates itself from point A to point B. The hardware part of the project has been assembling the car, checking the working of DC Motors and motor drivers. The software part that is the core of this project has been implementing the AI, Machine learning, and Deep Learning techniques to make the car autonomous.We conclude by stating that the autonomous car although a buzzing and new trends in the western countries, there is still an enormous obstacle that it faces when considered in Indian Scenario; the Main reason being the uneven roads and heavy traffic in the streets of this country. Having said so, India is not so far away from coming into this trend. As there are many more ways, this obstacle can be minimized to some extent.And we thus believe that AI would be playing a crucial role in this change.

COBDOST- A Farmer's Friendly Site

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Abstract

Now a days we see a lot of farmers getting into troubles by cultivating unadaptable crops due to either no prior knowledge of what to sow or due to sudden climatic changes which is affecting their livelihoods. To this problem we come up with a solution and that is "COBDOST- A FARMER'S FRIENDLY SITE". This project helps to predict statistically a better crop that could be cultivated for a better yield, basing on the past few decades data which includes climatic changes, geographical location, type of soil using AI & amp; ML techniques and Big Data Analytics. The basic requirement for the project is the farmer must have a basic idea of how to use the interface.

Conclusion

Food Production is very important for any living being to survive and it is very important in a country like India where the food productions are less and consumers are more we can't afford to take a wrong decision instead a proper guidance for the farmers could help them to cultivate the crop easily and efficiently.

Augmented Reality In Education

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Abstract

This project aims at making an interactive system where in all the necessary information required in the present world is presented to the user by augmenting the objects in the real world vision. This project addresses the overall problem of people, especially school children having the inability to imagine ideas. Specifically, our project addresses common "roadblocks" to learning faced by students, such as: limitations of understanding the theoretical concepts, a lack of analytical, critical thinking, and quantitative skills, differing cognitive styles, and a lack of comfort with advanced technology. In our project, we demonstrate how concepts learning can be made easy. Using the augmented reality, the project simplifies the learning process of understanding physics, chemistry, biology and other related concepts. This application is mainly developed for the students, and it will be as simple as just hovering over the text or the image they want to understand. Automatically, the related data will be shown from the application database. The project lets enable students to make the concepts clear on a particular topic by simply using the smart phone and the intended book. Thus, a concept of "Augmented Reality in Education" has been developed which harnesses the power of augmented reality in one"s phone to recognize the specific page on that book and provide extensive and intuitive augmented information pertaining to that page in the form of an image, video or its corresponding 3D model.

Conclusion

The system "Augmented Reality in Education" is implemented where a user can hover a camera over a page and obtain augmented information such as 3D Model, video or an explanation about that page. It is a system where no typing or searching is required for getting information. The application provides a helping hand to the children by facilitating them to learn new concepts using graphical aid. Since the application can be deployed on any smartphone, a student can use it as per his/her convenience. Also, there is no need of any extra maintenance for this application thus making it an economical solution. The interactivity aspect of this application like showing the 3D model allows the user to understand the concept from every angle. Also, the video shown with the controls gives the user the exact feel of learning in an actual classroom. The application can be expanded further and used for various age groups for not only learning but also helping the users to visualize and grasp things faster. It provides a unique and interesting way of learning and understanding of unknown concepts.

What Does It Take To Be A Software Developer At A Tech Product Based Company?

Nikhil Ponnuru
Software Developer, **Zerodha**

Hi, my name is Nikhil Ponnuru, I am a software developer at Zerodha, India's largest stock broker. I am an alumni of MVSR, passed out in the year 2017. I joined Zerodha, as a software developer straight out of college.

The role of a software developer is completely different in a product based company compared to a service based company. I will try to address how we work at Zerodha and using which I will try to give you an idea of what it takes to become a real software developer because Zerodha is the only company that I have worked at since my college graduation.

As a software developer your main role would be to code and architect the product in which you will be working and be a team player by properly communicating with fellow teammates. Only being good at coding is not enough, a high weightage is given to how good you are in communicating your thoughts and messages to others. Let me divide this into 4 parts, 1. Art of Googling, 2. Coding, 3. Communication, 4. Work-Life balance

1. Art of Googling :

One must be really good at using Google search engine. Why?, because one cant know and remember everything in their mind. Every best software developer in the world relies on the internet and google search. One must learn what to google and how to get the best search result (by using appropriate keywords.).

There is a joke, "Why are you being paid lakhs of rupees for being a software developer when you can simply google most things and build? because one must learn what to and when to google" (Source: Internet)

Now please remember this fact and proceed reading further. One need not be talented or intelligent always but has to be able to use common-sense and google to be a better software developer.

2. Coding:
a). Programming language :

Learning a programming language like say Java won't be enough to be a true software developer. For e.g, we at Zerodha majorly use Go, Python, Java, C++, Javascript. Why these many languages?, well it's because you choose a programming language based on a project but not the other way round. Java or Python are not default choices for all types of projects.

For e.g If there is a heavy need for concurrency, where 10000's of people may use your product at a time in a second, Python will fail miserably since it sucks at multi-threading. Go-lang is a programming language which is meant for this and which is why we use it in our most critical projects with millions of users. Nodejs (and hence javascript) is used in projects where there is a heavier need for IO operations than CPU. So every language has its pro's and con's

Now obviously you are not meant to be good at multiple languages. But what you need to be good at is being able to judge, weigh the pros and cons by benchmarking different languages for a project. For e.g before considering Go-lang at Zerodha, my colleagues have benchmarked nearly 10 different programming languages and finally made the decision that Go-lang is the best choice. To be able to do this, one needs to understand the concepts of programming languages irrespective of a language. No, you need not be super intelligent or talented, it's just common sense.

Once you get into a product based company there is no guarantee that you will work in a language that you learnt at college. It just depends on a project and you must be able to learn them quickly and adapt. (Dont worry, most languages are the same with just differences in syntax.)

b). Tools/ Softwares needed while coding :

During development :

Now one can't simply start coding in a file and save it. We need to use tools like Version control systems like GIT, Code Editors like VSCode, repository hosting softwares like Gitlab or Github. You constantly work on code, commit and push the changes to the repository.

During testing :

There will be CI/ CD (Continuous Integration/ Continous Development) pipelines, we use Gitlab for this and a test environment setup is arranged.

During production :

We use softwares like Docker, Kubernetes, Terraform, Ansible which nowadays are termed as DevOps. Servers will be hosted mostly in cloud at providers like AWS, Digital Ocean, Google Cloud etc.

So as you see, each stage is a big process and you will be working in any of them depending on your abilities and chosen responsibilities.

c). Architecting the project and Writing maintainable code :

Now once we get the details of the projects one can't just jump the gun and start coding. The project has to be planned and architected well. Now of course being a junior software developer you may not be asked to architect the project, but in all means you must be able to understand it and give your inputs.

Architecting a project will be a continuous process most of the times, you have to keep building better and maintainable code at all stages of a project

Now to be good at this, one must update their knowledge every now and then. Know the best practices, keep up with the latest advancements in one's area. But how to achieve it? Use sites like Hackernews (https://news.ycombinator.com/) like a holy book. Visit this site everyday and make it your daily ritual. It's a place where the best talent in the tech industry across the world discusses things. There are some good sites like dev.to, reddit (specific subreddits for tech like r/python) and Twitter (If you follow tech and dev people and topics.)

Check these articles

i) https://www.csc.gov.sg/articles/how-to-build-good-software
ii) https://zerodha.tech/blog/hello-world/

Writing maintainable code and easy to understand code following good software principles/ practices is given at most priority during code reviews. If your code doesn't meet the needed standards, your code will be rejected in code reviews and you have to re-submit after refactoring your code.

Also speaking of latest advancements in tech, checkout GPT-3, a revolutionary advancement in the field of AI which has potential to automate several industries.

3. Communication :

No matter how good you are at coding, if you are not a team player or good at communicating your thoughts properly to others you are not worthy to be a software developer at a product based company.

Hone your communication skills if you are bad at them. No, I don't mean you have to be good at English, I mean mainly the soft skills part. There were instances in our company where a couple of software developers were let go only because they were bad at their communications.

4. Work-Life balance:

A good product based company will have the best work-life balance unlike most of the service based companies. A product based company will give you the freedom to work at your own pace, have your own manageable goals and most importantly gives the freedom to experiment stuff at work. We at Zerodha for e.g, experiment with many things, do our R&D (irrespective of your work experience) and finally submit a draft of our learnings which will be given a final nod if everything looks fine.

I am pretty sure you can't expect most of the above things in a service based company.

I hope you will be trying to improve yourself every day and stay positive and ready for an opportunity when it knocks your door.

You can check my work here https://zerodha.com/products#varsity, This is one of the projects that I have worked at Zerodha. It's a mobile app built using React Native (Javascript) for the frontend and Python in the backend. I was not a mobile app developer before this project, but I needed to learn it and complete it all on my own since it's an idea I proposed. (Now this is a huge benefit in some of the product based companies, where you can propose an idea and get its approval and work on it all by yourself.)

Faculty Name	Category	Level	Title	Date DD-MM-YYYY	Description
Meduri Anupama	Achievement	National	"Optimal Key Management Technique for Secure Data Transmission in MANETs"	12-06-2019	Copyright for "Optimal Key Management Technique for Secure Data Transmission in MANETs" ROC No. SW-13020/2019 by Ministry of Commerce and Industry, Government of India.
Marneni Dyna Balraj	Achievement	National	Qualified in TS-SET-2019	06-07-2019	Qualified in TS-SET-2019
Gummedelli Srishailam	Achievement	State	Telangana State Eligibility Test	06-07-2019	Telangana State Eligibility Test for Assistant Professor in Computer Science & Applications
T. Sujanavan	Achievement	International	Diploma in Web Design	03-07-2019	Organizer=Alison, Final Score:85%
Meduri Anupama	Award	Institution	All Time Best Teacher Award	16-07-2019	All Time Best Teacher
Daggubati Sirisha	Achievement	National	Best Paper	28-07-2019	Secured First Prize in Paper Presentation @ DST Sponsored National Conference held at Mahatma Gandhi National Institute of Research and Social Action
Gummedelli Srishailam	Achievement	National	NPTEL ELITE SILVER Award for Database Management System Online certification	01-09-2019	NPTEL ELITE SILVER Award for Database Management System Online certification, stood in top 2%
T. Sujanavan	Award	National	Elite+Silver & Topper (Top 5%)	10-10-2019	Internet of Things (IoT) Course End Exam - Certified by NPTEL (Consolidated Score=85%)

Faculty Name	Category	Level	Title	Date DD-MM-YYYY	Description
Gummedelli Srishailam	Achievement	National	NPTEL ELITE SILVER Award for Problem Solving through Programming in C Online certification	16-11-2019	NPTEL ELITE SILVER Award for Problem Solving through Programming in C Online certification(top 5%)
Daggubati Sirisha	Award	National	Paper Presenter Award at International Conference	21-12-2019	Awarded to the CSI member Faculty who presented papers at prestigious International Conferences during 01-07-2018 to 30-06-2019
Daggubati Sirisha	Award	National	Longest Continuous SBC Award	21-12-2019	Awarded to the Student Branch Counsellor with longest continuous tenure at one or more colleges as SBC over the past 5 years
Dr. H Jayasree	Appreciation	National	NPTEL Discipline Star	30-12-2019	Certificate of Appreciation -- for completing more than 50 weeks of learning ; final score in each subject >=55
Vikram Narayandas	Award	National	Teaching Excellence Award	17-01-2020	on occasion of "national summit on women & education empowerment 2020" on 17th January,2020 supported by MSME, startup India, and DST.

Faculty Achievements

Faculty Name	Category	Level	Title	Date DD-MM-YYYY	Description
Meduri Anupama	Award	National	E-yantra task based Competition - Class A Award	12-02-2020	E-yantra task based Competition - Class A Award by IIT Bombay
T. Sujanavan	Award	National	e-Yantra Task Based Training (TBT) CLASS-A AWARD	01-04-2020	CSE Faculty Team who represented our college in e-Yantra (Robotics Challenge) organized by IIT Bombay
Vemula Sridhar	Award	International	AWS Educate Cloud Ambassador	06-04-2020	Issued by AWS Educate
Pasupulate Shalini	Appreciation	International	ACM Chapter Officer-Appreciation	30-04-2020	On behalf of ACM Headquarters, I have received appreciation for my leadership, commitment and contributions as a faculty sponsor for MVSR ACM Student Chapter during the past year in ACM MVSR Student Chapter term office
Tiruvayipati Sujanavan	Achievement	International	Certification in "The Fundamentals of Digital Marketting"	25-05-2020	Issued by Google, Accredited by The Open University, Endorsed by IAB Europe
T. Sujanavan	Achievement	International	Digital Badge - "The Internet of Things with SAP"	27-05-2020	Issued by open SAP, SAP Leonardo
T. Sujanavan	Achievement	International	Digital Badge - "Google IT Support Professional Certificate"	28-05-2020	Issued by Coursera, Course developed by Google

Faculty Achievements

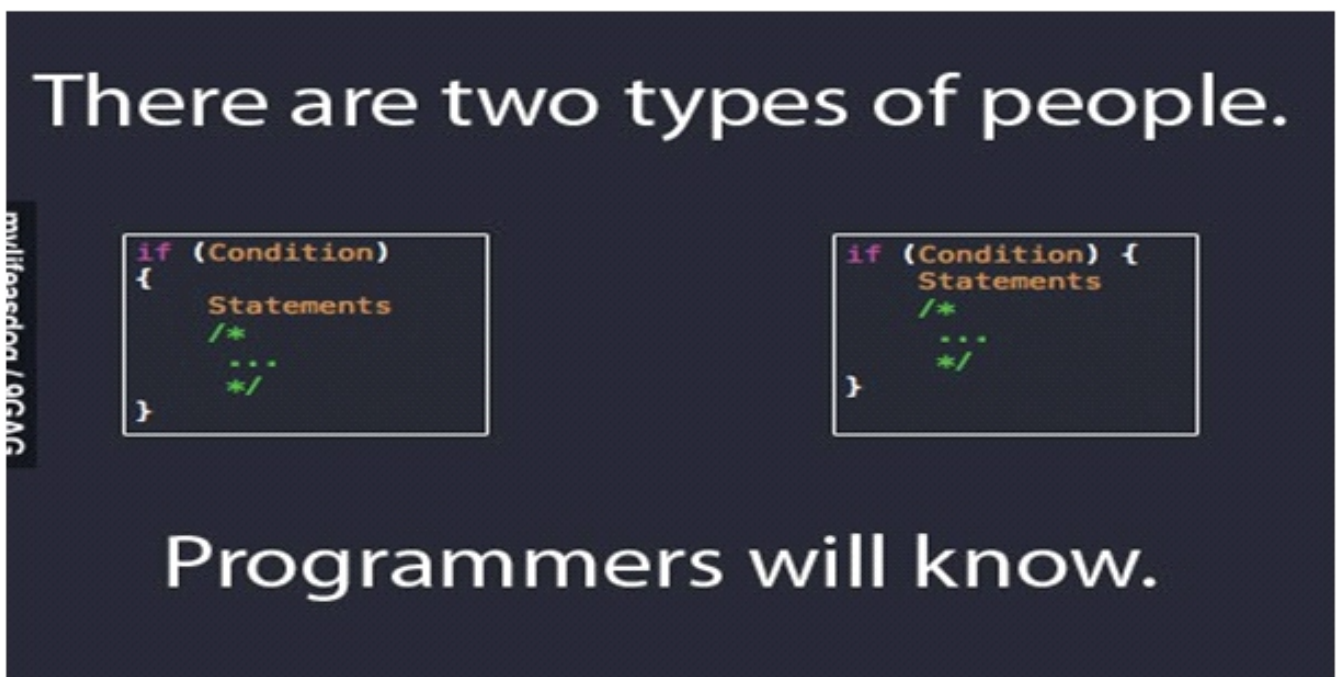| Faculty Name	Category	Level	Title	Date DD-MM-YYYY	Description
Kanajam Muralikrishna	Achievement	International	Digital Badge - "Google IT Support Professional Certificate"	28-05-2020	Issued by Coursera, Course developed by Google
T. Sujanavan	Achievement	International	Digital Badge - "z/OS Mainframe Practitioner"	01-06-2020	Issued by Coursera, Authorized by IBM
Kanajam Muralikrishna	Achievement	International	Diploma in HTML5, CSS3 and JavaScript - Revised	06-06-2020	Organizer= Alison, Final score=80%
Kanajam Muralikrishna	Achievement	International	Diploma in Computer Networking - Revised	06-06-2020	Organizer= Alison, Final score=80%
Kanajam Muralikrishna	Achievement	International	Diploma in Demystifying Networking	06-06-2020	Organizer= Alison, Final score=83%
Kanajam Muralikrishna	Achievement	International	Digital Badge - "Cybersecurity IT Fundamentals Specialization"	05-06-2020	Issued by: Coursera	Authorized by: IBM
Vemula Sridhar	Achievement	International	Service Now Certified Application Developer	19-06-2020	Certified in Service Now Developer exam

Roll Number	Name of the Award	Name of International Institution / Organisation from where the award has been received
2451-17-733-013	Smart India Hackathon, Internal Hackathon - 2020	Smart India Hackathon
2451-17-733-009	Certificate of Appreciation	MVSR/MHRD
2451-16-733-044	Section Student Congress'19	IEEE Hyderabad Section
2451-17-733-176	Highest Committed Student Activist	CSI INDIA
2451-16-733-077	Gate Score Card	Institution Of Eminence
2451-16-733-078	Gate Score Card	Institution Of Eminence
2451-16-733-160	GRE Test Taker Score Report	ETS
2451-16-733-150	GATE	IIT Delhi
2451-16-733-003	GATE 2020 SCORECARD	INDIAN INSTITUTE OF TECHNOLOGY, DELHI
2451-16-733-129	GATE Score Card	GATE 2020 By IIT-D
2451-16-733-142	GATE 2020 Score Card	IIT DELHI
2451-16-733-131	GRE Exam	ETS
2451-16-733-057	IELTS(ACADEMICS)	IDP

Jokes

1). What do computers do just before going to bed?

Spread sheets.

2). Why was the computer scary?

Because it had a terrorbyte.

3). Learning Computer Science is great! Students learn bit by bit....and the revision is all byte-sized.

4).

There are two types of people.

```
if (Condition)
{
    Statements
    /*
    ...
    */
}
```

```
if (Condition) {
    Statements
    /*
    ...
    */
}
```

Programmers will know.

5).

Dude 1: We should make a game

Dude 2: But I only know 1 data structure

Push & Pop [4+]
Rocky Hong >
Offers In-App Purchases

★★★★☆ [410]

GET

M. Anupama
Associate Professor

Tricky Riddles

1) WE KILL, AND WE GIVE LIFE. WE ARE EITHER POISON OR FRUIT.
   YOU CHOOSE. WHAT ARE WE?

2) THE MORE YOU TAKE OUT OF IT, THE BIGGER IT BECOMES. WHAT IS IT?
3) I EXIST ONLY WHEN THERE IS LIGHT, BUT DIRECT LIGHT KILL ME. WHAT AM I?
4) EVERY EVENING I GET MY ASSIGNMENT, AND I ALWAYS FULFILL IT. BUT EVERY
   TIME I DO, I GET SCOLDED. WHAT AM I?

5) IT ONLY INCREASES AND NEVER DECREASES. WHAT IS IT?

<u>Answers</u>:
1) WORDS
2) A PIT
3) A SHADOW

4) AN ALARM

5) OUR AGE

M.Naga Rani
Programming Assistant
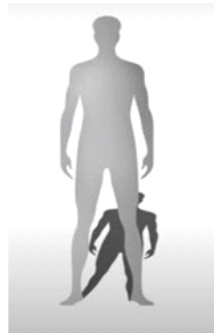
Linux Puzzle

1	2	3	4	5	6		7
	8						
9					10	11	
		12		13			
				14			
15				16			17
		18					

Across

1. Distro for over-50 women who wear purple
8. Encrypted, secure window glue
9. Systems group in charge of Linux (abbrev)
10. Igpay-atinlay anslatortray
12. Package converter from another planet
14. Abort TCP connection (abbrev)
15. Grave-robber's toolkit
16. The emergency virus response team, for sure
18. A very quiet CLI

Down

2. PS In a capsule
3. The heavy-metal method of estimating disk usage
4. A computer language that's all show
5. Non-cron command scheduler
6. Set shell variables on a newspaper press?
7. A Free privacy guard
9. Where everything starts
11. C header file for interrupt handlers (without ".h")
12. A beautiful sound system for KDE
13. A party line protocol (abbrev)
17. Transmit (abbrev)

Dr. D. Sirisha,
Asst. Prof.

Logos & their Hidden Meanings

The lines represent the Golden Gate Bridge of San Francisco which was a source of inspiration for its founders as they drove down into the city to register the company.

The Ubuntu logo depicts an overhead shot of three people joined together, holding hands and looking up towards the sky. All in all, a rather clever and fitting logo/name combination, as the word Ubuntu means "Humanity".

The white lines passing through give the appearance of the 'equal to' sign in the lower right corner, representing equality.

Amazon is a powerhouse when it comes to online shopping, and their logo reflects that. The yellow arrow in their logo starts at the letter 'a' and ends at the letter 'z', implying that they sell everything from a to z. The arrow also represents a smile, with the arrowhead being a stylized dimple or smile line. The smile indicates the happiness people feel when they shop with Amazon

SUN stands for Stanford University Network. The logo of this leading software manufacturer was created by professor Vaughan Pratt from Stanford University where the diamond icon actually says Sun in every direction
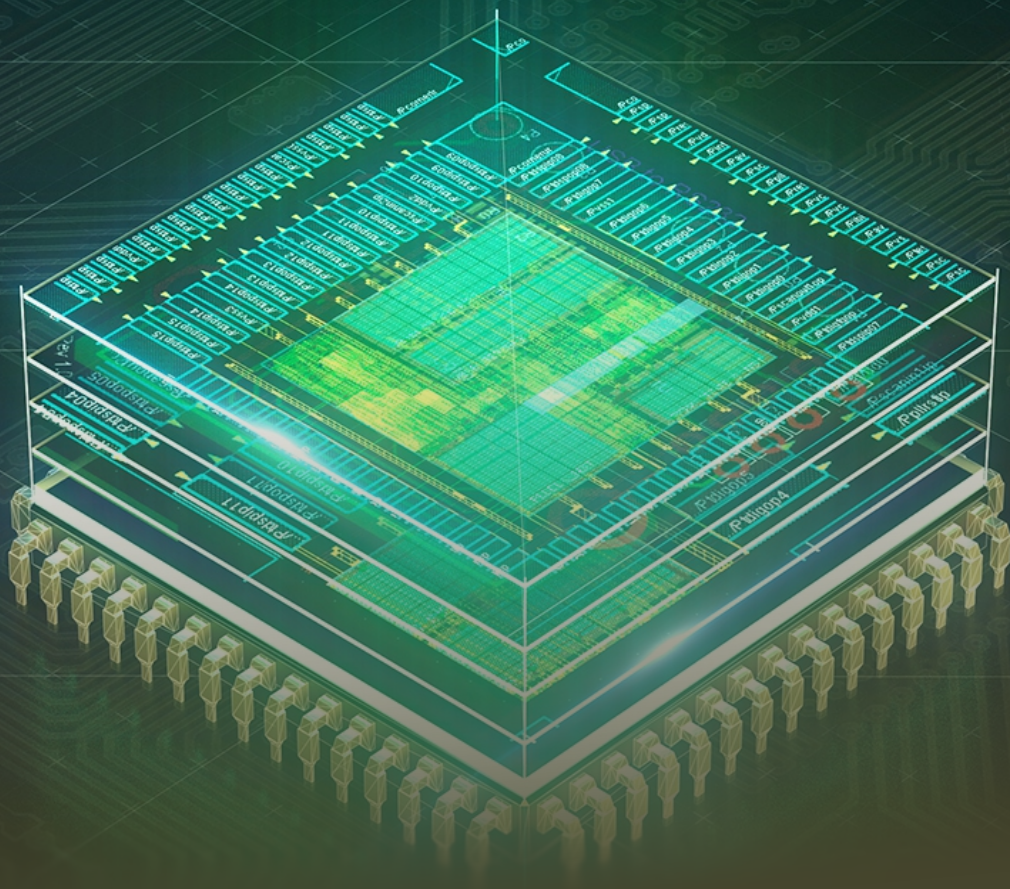
Sai Goutham Goli
2451-18-733-122

TECHNOLOGY ENHANCES CREATIVITY
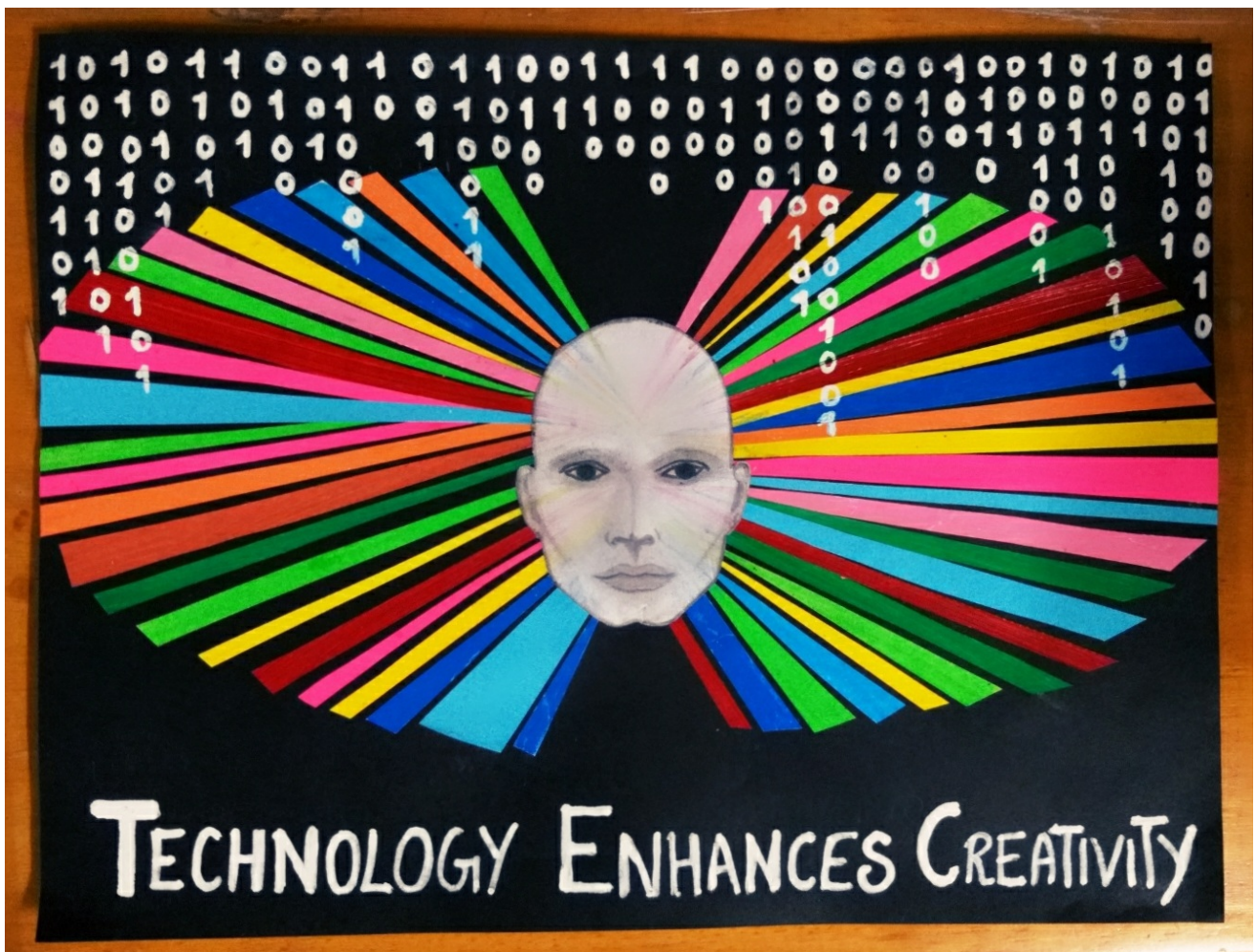
Ch. Sujitha Reddy
CSE, 2451-18-733-180

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Affiliated to Osmania University, Recognized by AICTE

EAMCET/ PGECET/ ICET Code: MVSR

Department of Computer Science and Engineering

www.csemvsr.blogspot.com