B.M.S. COLLEGE OF ENGINEERING

(AUTONOMOUS INSTITUTE, AFFILIATED TO VTU)

Department of Information Science and Engineering

ISE NEWS-BITES

A newsletter from ISE Student Club - A techno-cultural Club under the aegis of ISE Department

Annual Edition 2021 Issue 2

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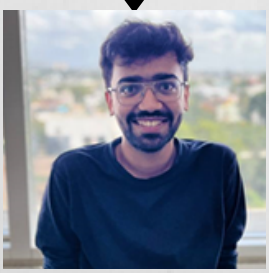

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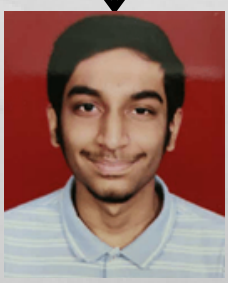


Mohit Jain
IBM21IS095

CONTENTS

Sri B. M. Sreenivasaiah
Founder,
BMS Educational Trust

Sri B. S. Narayan
Donor Trustee,
BMS Educational Trust

INSTITUTE VISION

Promoting Prosperity of mankind by augmenting Human Resource Capital through Quality Technical Education & Training**.**

INSTITUTE MISSION

Accomplish Excellence in the field of Technical Education through Education, Research and Service needs of society.

DEPARTMENT VISION

Promote Quality Human Resource Capital by inculcating in every student the art of Creativity and Productivity in the field of Information Technology.

DEPARTMENT MISSION

Offer High Quality Graduate, Post Graduate Programme in Information Technology to prepare students for higher studies and professional career in industry.

Provide good Teaching and Research environment for Quality Education in the field of Information Technology.

UNDER GRADUATE PROGRAMME
INFORMATION SCIENCE & ENGINEERING

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1: Excel as IT Professional with Proficiency in designing solutions to Information Engineering problems.

PEO2: Pursue higher studies with the sound knowledge of basic concepts and skills in science and IT disciplines.

PEO3: Exhibit professionalism, team work and expose to current trends towards continuous learning.

PROGRAMME OUTCOMES (POs)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: 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.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO1: Apply and Analyze the concepts of Computer Networks to provide solution for evolving needs in Information Technology

PSO2: Demonstrate knowledge of Software Engineering and Data Science with competence in programming languages to solve real-world problems.

PSO3: Apply principles of information systems in the field of engineering for proficient solutions

POST GRADUATE PROGRAMME
COMPUTER NETWORK ENGINEERING

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1: Excel in their Professional career in computer network engineering and allied disciplines

PEO2: Achieve Proficiency in Industry to Academia and Research for Development

PEO3: Exhibit professionalism, team work and adapt to the latest technologies through continuous learning

PROGRAMME OUTCOMES (POs)

PO1: An ability to independently carry out research / investigation and development work to solve practical problems

P1A1: Activity-I: Conducting experiments to investigate/validate / analyze the identified research (paper/Thesis);

P1A2: Activity-II**:** Apply research methodologies / techniques / modern tools to provide practical solution to benefit an identified community

P1A3: Activity-III**:** Engage in critical analysis to arrive at a valid conclusion through research (theoretical/practical/ policy) to provide an alternate/optimal solution to an identified problem;

P1A4: Activity-IV**:** Ability to independently carry out study and present results (expected or otherwise) for a defined problem

PO2: **An ability to write and present a substantial technical report / document**

P2A1: Activity-I**:** Engage in independent study to prepare a technical document/make an oral presentation to address engineering concepts

P2A2: Activity-II**:** Engage in independent study to prepare a Poster presentation of the identified work/task;

P2A3: Activity-III**:** Prepare a technical document for the identified product / system;

PO3: **An ability to demonstrate mastery in the domain of the specialization of the program**

P3A1: Activity-I**:** Ability to demonstrate In-depth knowledge/Scholarship of knowledge in the identified domain;

P3A2: Activity-II**:** To demonstrate scholarship of knowledge through performing in a group to identify, formulate and solve a problem that requires multiple skills

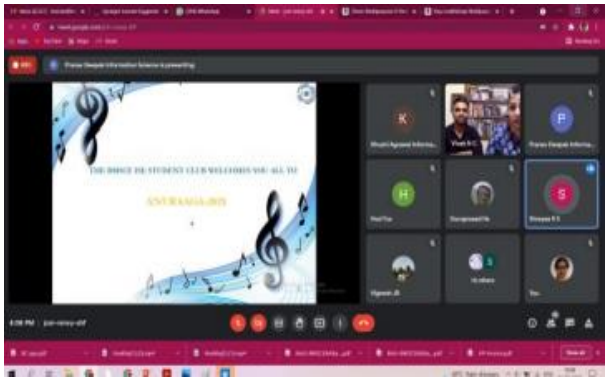
P3A3: Activity-III**:** To demonstrate scholarship of knowledge to arrive at a mathematical model to effectively represent the given system/device

P3A4: Activity-IV**:** To demonstrate scholarship of knowledge through developing applications /conducting experiments / performing mathematical analysis / simulation study to arrive at the solution for the domain specific problems

P3A5: Activity-V**:** Nurture analytical and critical thinking abilities for data /requirements-based decision making

P3A6: Activity-VI**:** Comprehend management theories and practices to arrive at a business model for an engineering solution

Moments from around the Department



July 4, 2021:

Department of Information Science & Engineering Student Club organized (online) Musical Event "ANURAAGA" in remembrance of Gana Gandharva Dr. SPB for First year students.

July 13, 2021:

Five teams of students of Information Science & Engineering and Computer Science & Engineering were offered with 5 CTY [Catch them young] projects from HPE under the mentorships of Dr.Shubha Rao, Smt.Mahalakshmi of ISE & Dr.Nandini, Dr.B.S.Rajeshwari and Dr.Panimozhi of CSE along with the external mentors from HPE. All the teams successfully completed the projects and were awarded with a cash prize of Rs.1,10,000/- from HPE.

July 24, 2021:

Dr.M.Dakshayini, Professor & Head, Department of Information Science & Engineering was invited as panelist (online) for the "National Level Technical Symposium on Computing and Communication Systems" by R.V.College of Engineering, Bengaluru.

July 24, 2021:

Smt.Chandrakala G Raju, Faculty, Department of Information Science & Engineering received Appreciation Certificate in recognition of her contribution in the field of Women empowerment by SHIKSHAK KALYAN FOUNDATION.

July 24, 2021:

BMSCE Upagraha Club organized Valedictory Ceremony (virtual) for the senior students. It was attended by the Mentor, Programme and Project Director, Deputy Project Directors of various subsystems, team leads and all the members of the Club who had contributed to the project since its inception. New Team Leads for 2021-22 were identified and welcomed. To Mark Completion of 2 years of BMSCE UPAGRAHA a short video was also released and is available at:
https://www.facebook.com/watch/?v=1026551561421540.

July 28, 2021:

Smt.T.S.Shobana, Faculty, Department of Information Science & Engineering along with students H.S.Rohan, Aditya lall and Gagan Kashyap published paper titled "Advanced Encryption Standard Based Access Control With BlockChain Security In Personal Health Records" in the International Journal Of Current Engineering And Scientific Research (IJCESR), ISSN 2393-8374.

August 14, 2021:

Dr.Sandeep Varma, Faculty, Department of Information Science & Engineering has been nominated as Advisor, Computer Society of India – Student Branch, Bangalore Section.

August 16, 2021:

Department of Information Science & Engineering organized a One week e-Faculty Development Programme on "DevOps" from August 16- 20, 2021. Mr.Venkatesh Bant, Build and Release Engineer, Dell International Hyderabad, Mr.Zaid Mombasawala, DevOps Engineer, Dell Technologies. Mr.Avinash Mihani, Principal Software Engineer, DevOps, Dell Technologies, Mrs.Sailaja Karri, Senior Manager, Dell.

August 17, 2021:

Dr.P.Jayarekha and Smt.H.M.Anitha, Faculty, Department of Information Science & Engineering submitted a proposal to Vision Group of Science & Technology (VGST) for conducting Faculty Development Program. They received a grant of Rs.2.00 Lakhs.

March 8, 2021:

Dr. M. Dakshayini, Professor & Head, Department of Information Science & Engineering was invited to deliver sessions on "Formation of various Committees" and "Various activities to be performed" in connection with Accreditation for PG Programmes by Bangalore Institute of Technology, Bengaluru.

August 18, 2021:

Department of Information Science & Engineering organized e-Hands-on Workshop on "Web API Development" for the students of M.Tech as part of Open Elective Course. Resource persons were experts from Postman.com.

August 18, 2021:

Dr.Sandeep Varma, Faculty, Department of Information Science & Engineering submitted a project titled "Experiment Evaluation of Reinforcement Learning Algorithms by Augmenting Transfer Learning." to AI &Robotics Technology Park, IISc., Bangalore under "Student Innovation Grant Program" for a period of One Year. The project was sanctioned a mini grant of Rs.6.60 Lakhs. Out of 131 proposals in the UG category from various premier institutions, only 29 projects were funded.

August 23, 2021:

Department of Information Science & Engineering organized AICTE ATAL Academy sponsored Five Day Faculty Development Program on "5G TECHNOLOGY" (online) from August 23-27, 2021.

August 25, 2021:

Department of Information Science & Engineering organized defense in respect of Mrs.B.S.Sowmya Lakshmi, Research Scholar on Ph.D thesis titled "Cross Language Information Retrieval for Codemixed Kannada English Queries" under the guidance of Dr.B.R.Shambhavi, Faculty of the Department. Dr.Tanvir Ahmad, Professor & Head, Department of Computer Engineering, Jamia Millia Islamia, New Delhi, was the External Examiner.

October 3, 2021:

Dr.Shubha Rao, Faculty, Department of Information Science & Engineering along with students Anu Priya Jain and Muskan Agarwal presented paper titled "Employee Burnout Prediction: A Supervised Learning Approach" in the IEEE 2nd GCAT, Bengaluru held from October 1-3, 2021.

October 23, 2021:

Smt.H.M.Anitha, Faculty, Department of Information Science & Engineering along with students Anusha G Krishna, Divyansh Singh Rathore and Nidhi Sanjay Singh presented paper titled "Securing Data Workflows: An Insight into Cloud Security" in the AICTE sponsored ICACC-2021(IEEE), Kochi.

October 24, 2021:

Dr.N.Sandeep Varma, Faculty, Department of Information Science & Engineering along with his final year UG project team students (Pushya D, Shreyas N, Shreya P) presented research work on "FDMCA: A Novel Authentication Technique using Face Detection and Gaze-based Morse Code Entry" in the International Conference IEEE Mysurucon 2021 organized by IEEE Mysore Subsection at Navkis College of Engineering, Hassan.

October 25, 2021:

Dr.N.Sandeep Varma, Faculty, Department of Information Science & Engineering and Project Fellows (UG) presented the progress of the R&D project (Project ID- UG-04) to Mr.Naveen Arulselv, Project Mentor from Artificial Intelligence and Robotics Park (ARTPARK), IISc, Bengaluru.

November 1, 2021:

Smt.H.M.Anitha and Dr.PJayarekha, Faculty, Department of Information Science & Engineering published research paper titled "Multistage Authentication to Enhance Security of Virtual Machines in Cloud Environment" in the International Journal of Advanced Computer Science & Applications(IJACSA)(WOS),12(10), 2021.http://dx.doi.org/10.14569/IJACSA.2 021.0121068.

November 2, 2021:

Department of Information Science & Engineering in collaboration with ISRC steered extension activities through conduction of classes for 9 th & 10th standard students of Amrita Sishu Nivasa, Basavanagudi. students of Information Science & Engineering & Mechanical Engineering rendered their services as tutors.

November 9, 2021:

Dr.B.R.Shambhavi, Faculty, Department of Information Science & Engineering published research paper titled “Combined deep learning classifiers for stock market prediction: integrating stock price and news sentiments” in Kybernetes (WoS Q3 Journal).

November 15, 2021:

Dr.N.Sandeep Varma, Faculty, Department of Information Science & Engineering received equipment of Rs.1.65 Lakhs (Apple M1 Based Workstation) from Artificial Intelligence and Robotics Technology Park (ARTPARK), IISc, Bengaluru to conduct experimentation on Deep Learning Games.

November 26, 2021:

Dr.M.Dakshayini, Professor & Head & Dr.V.Shubha Rao, Faculty, Department of Information Science & Engineering have been awarded with “Certificate of Excellence” with $900 for completing the work-let “AI_ML Powered - A Method to Mitigate Service Outage in Software Defined Data Center Network” given by SAMSUNG.

November 30, 2021:

Dr.B.R.Shambhavi, Faculty, Department of Information Science & Engineering published research paper titled “Learning to Translate Kannada and English Queries for Mixed Script Information Retrieval” in Computing and Informatics Journal (WoS Q4 Journal), Vol 40 No. 3, pp 628-647.

November 30, 2021:

Dr.P.Jayarekha, Faculty, Department of Information Science & Engineering was invited as expert for NBA Mock Inspection by Sir M..Visvesvaraya Institute of Technology, Bengaluru.

December 1, 2021:

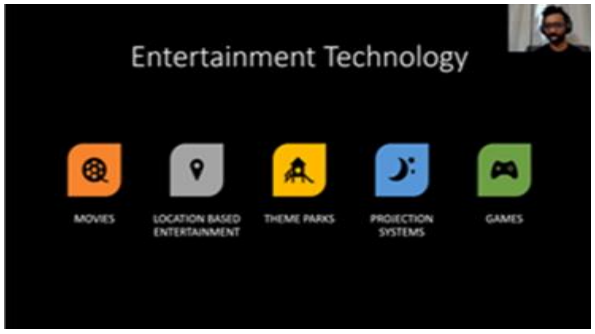
Smt.V.Nalina, and Dr.P.Jayarekha, faculty from the dept. of ISE published a paper titled "Cloud-assisted multi-tier hierarchical safety routing strategy for collision avoidance in vehicular ad hoc network" in International Journal of Vehicle Information and Communication Systems, Inderscience Publications, Vol. 6, No. 3-4pp 251-273.

December 9, 2021:

Sri.Gururaja H S, Dr. N. Sandeep Varma, Asst. professors of ISE Department organized talk on “Innovation and Technology” by an industry expert, Sri. Murali N from Hewlett Packard. The talk was organized as a part of VII-semester Industry Motivated Course.

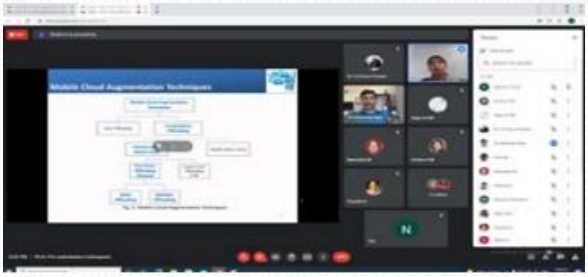
December 25, 2021:

Department of ISE had organized a eWebinar on "Augmented Reality & Virtual Reality" by Mr. Sujay, Founder Viga Entertainment Technology, Alumnus of EC Dept. for the benefit of BMSCE students.



December 27, 2021:

Ph.D Pre-submission Colloquium of Mrs. Sindhu K, Asst. Prof., Department of ISE under the guidance of Dr. H S Guruprasad was conducted.



December 31, 2021:

Sri.Gururaja H S, Dr. N. Sandeep Varma faculty of dept. of Information Sc., & Engg., organized an industry expert talk on 'Corporate Innovation' by Mr.Manjuprakash Rama Rao, Director, Advanced Technologies, Honeywell. The talk was organized as a part of VII-semester Industry Motivated Course.

Students' participation in IEEE Events

July 3, 2021: Online webinar on "Project Pie", a learning platform

BMSCE IEEE in collaboration with Project Pie organized an online webinar on "Project Pie", a learning platform. The speakers for the session were Mr. Rakesh V and Mr. Anil Battalahalli, both of whom are the proud alumni of BMS College Of Engineering. Project Pie gives students the access to knowledge and skills by breaking the barriers of financial status, grades and other factors. It offers student project-based learning and a platform for applying the newly acquired skills.

July 9, 2021: Webinar on HEALTHCARE MANAGEMENT - FUTURE WITH IOMT AND WEARABLE DEVICES

BMSCE IEEE organized a webinar on "Healthcare Management - Future with IoMT and wearable devices". The speaker for the session was Ms. Swati Hegde, a business strategist at Lido learning. The students learnt about the basics of IoMT, its real-life applications and the rising importance of IoMT devices in the medical field.

August 16, 2021: THE 3 PM WEBINARS

BMSCE IEEE in collaboration with CIIRC (Center for Incubation, Innovation, Research and Consultancy) organized "The 3 PM Webinars" spread across a week. To feed the scientific hunger of the students across all domains of Engineering, the webinars were conducted on a range of topics, such as, micro air vehicles, 5G, the future of waste handling etc.

August 31, 2021: IEEE Xtreme Orientation - A 24-hour Global coding competition

Experience the thrill of competitive programming in a digital battlefield with your peers! IEEE presents one of its flagship events, IEEE XTREME 15.0 - a 24-hour Global coding competition where participants from around the world compete vying for the top spot. Attend our orientation to learn more about all the benefits and details of this mega event.

September 21, 2021: Webinar on "You are the Center of the world around you"

BMSCE IEEE SB in collaboration with BMSCE IEEE WIE Chapter and the Heartfulness Research Center organized a webinar on "You are the Center of the world around you" by Dr. Mohandas Hegde, Director of Heartfulness Research Center, Mysuru. The webinar highlighted the correlation between peace and happiness and its massive impact on any human life. The heartfulness method of meditation was also taught, thus completing the circle for the pursuit of happiness.

October 7, 2021: IEEE Day

BMSCE IEEE SB hosted its flagship event, ""IEEE Day"" staging 13 different events and 6 cultural performances spanning over the 7th, 8th and 9th of October 2021. A series of technical and non-technical events were organized in collaboration with 19 clubs of the college for the students with an aim to address both technical learning and entertainment.

October 23, 2021: XTREME 15.0 – A 24-hour Codeathon

BMSCE IEEE hosted "IEEE Xtreme 15.0" - a fun filled 24-hour codeathon organized by IEEE. Xtreme is a platform for students to bring out the coder in them and win exclusive rewards at the international forum. IEEE Xtreme 15.0 was held on the 23rd and 24th of October. The student branch boasted the highest number of registrations in its category of "Large Student Branch" and was recognized for the same.

ISE Student Club Activities

August 24, 2021: CODING CONUNDRUM

The I.S.E Student Club organized a Coding Contest where the participants had to solve 9 competitive programming challenges given to them in a programming language of their choice. The participants were given 2 hours of time to solve the challenges of Easy, Medium and Hard difficulty levels. The event was conducted on the Hackerrank platform. The final results were declared on the basis of the participants' speed and correctness of their solutions.

August 14, 2021: SHARK TANK

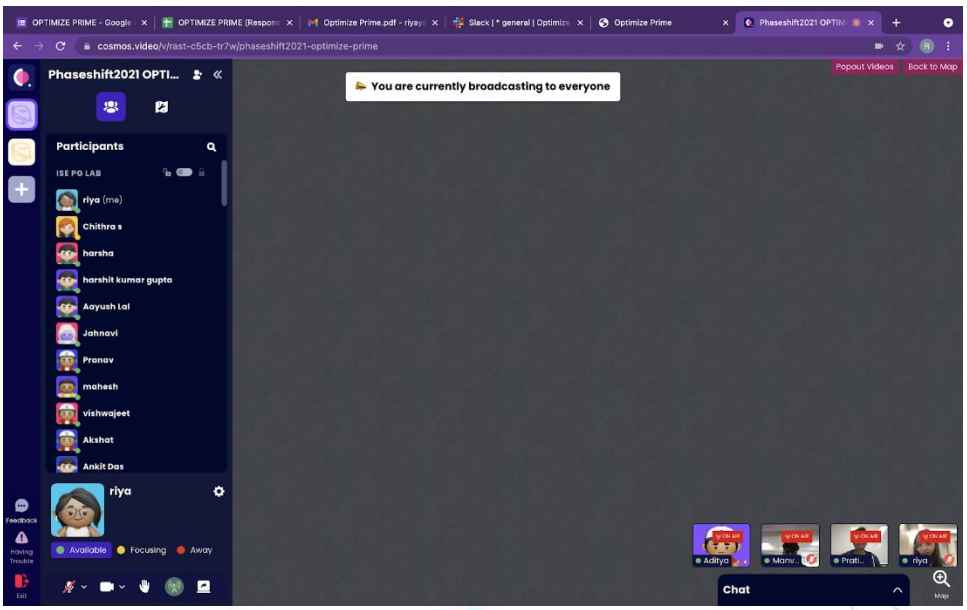
The I.S.E Student Club organized a non-technical event based on the reality television series Shark Tank. It allowed young entrepreneurs to make business presentations to a panel of three investors or "sharks" who decide whether to invest in their company. In the event, Mr Prakhar Chaube, Mr Mahesh M P and Mr Suhas Motwani represented the role of sharks in the event. Results were declared based on the stakes and investment by the sharks.

October 14, 2021: RUNTIME TERROR

The I.S.E Student Club organized a Reverse Coding Contest where the participants had to solve competitive programming challenges given to them in a programming language of their choice. The participants were given 2 hours of time to solve the challenges of Easy, Medium and Hard difficulty levels. The event was conducted on the Hackerrank platform. The final results were declared on the basis of the participants' speed and correctness of their solutions.

November 26, 2021: OPTIMIZE PRIME

Optimize Prime was an online 24-hr long Hackathon based on UI/UX Design. The participants were asked to identify a real-world problem that can be solved with the help of a website/web application and build a fully functional front-end which attempts to solve the problem. Mr. Pratik Kapasi was our resource person as well as judge for the event. He is currently working at Google and has a start-up named HeyCoach.



November 27, 2021: LOGOMANIA

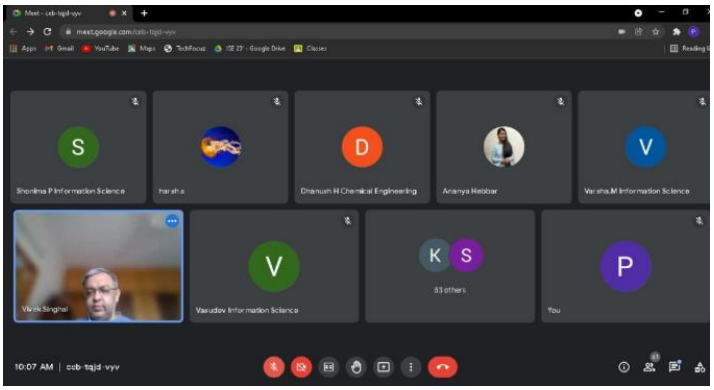
This is a flagship event of the ISE department, a cut-throat time-based rapid-fire competition where participants will face multiple rounds, namely Taboo, Predict and Depict and Creative Design. Logomania is a squid game themed point-based event where the progressive elimination of participants to the following games will be determined based on their scores.

November 27, 2021: ROBOT PROCESS AUTOMATION

Robotic process automation (RPA) is a software technology that makes it easy to build, deploy, and manage software robots that emulate human actions interacting with digital systems and software. Robotic process automation (RPA) is the use of computer software 'Robots' to handle repetitive, rule-based digital tasks. It was a three hours interactive workshop. The participants were very involved in the workshop coming up with doubts and ideas. These doubts and ideas were cleared by Mr Mukesh Kala (Instructor).

November 27, 2021: AI BOOTCAMP WORKSHOP

Artificial Intelligence is no longer a fantasy; it is the future! Learning the nitty-gritty of ML and DL in this online hands-on workshop conducted by CellStrat AI Lab. The simulation of human intelligence processes by machines and computer systems is not only incredibly interesting, but it is also an increasingly important career path for budding engineers!



Students' participation in Pentagram Events

August 17, 2021: Tournamath

It was an online event conducted on Discord. The event started off with 14 registered teams with each team consisting of two players. The phase 1 of the Round of 16 called the "Lightning round" with each team answer a clocked Google form of 10 minutes, with 10 tricky logic/math based questions, followed by phase 2 of the Round of 16 - a face off event where each of the 14 teams was paired up randomly with another team to face off in a quiz-type round with eight questions being aimed at them on separate voice channels simultaneously, where each team got one whole minute to answer 4 BODMAS and 4 Blood Relations type questions. At the end of this round, a cumulative of both phase 1 and phase 2 was calculated and the top 7 of the 14 participating teams qualified for the next round, and one wild card team was also chosen to qualify for round 2 based on round 1 performances.

The winners of the event were announced on the next day i.e 18th of August,2021. The winning teams with their respective rankings are:

1) Mohit Raj Bhurat and Kalp Dantewadia 2) Neelam Godihal and Meghana G K

November 25 & 26, 2021: Gridlocked

This Event was conducted on 25th and 26th of November, 2021 during PhaseShift 2021. This was a blended mode event, where it was online on 25th November and offline on 26th of November. The winners of the event got a cash prize of ₹ 1250 and the runners got a cash prize of ₹ 750 Our initial number of participants were 24 teams (48 members) .Our event had 3 rounds: Prelims, Quiz Round, Final Map Game. The winners and runners were given the cash prize respectively. Overall, the event went very well and the competition in the end was very intense. The event was successful and well received.

November 26, 2021: Campus Conquistador

It was an offline event, conducted in collaboration with BMSCE IEEE SB as part of the IEEE Day 2021. It was an open event to all BMSCE students. The organizing committee and the participants were members from all three years (2nd, 3rd, and 4th). The event was split into two parts: The Preliminary Round and the Main Round and the participants had to take part in a team of 2. The event was a successful one. The event was concluded by 2 pm and a group photograph was taken at the end.

November 26 & 27, 2021: Infinite Hunt

Infinite Hunt was the flagship event of Pentagram conducted in collaboration with Phaseshift 2021, the national tech symposium of BMSCE. This year's event was mainly designed on the theme of the recent famous Korean web series - Squid Game. The event was conducted on 26th and 27th November 2021. The event was sponsored by The Gate Academy and co-sponsored by MAAC-Maya Academy of Advanced Cinematics. The event was open to students of all colleges. The organizing committee and the participants consisted of students from second and third years.

November 27, 2021: Math mania

Math Mania is one of the annual events organized by Pentagram, the Mathematical Society of BMSCE and is conducted during Phaseshift, the annual technical festival of BMSCE. This year, Math Mania was conducted via online mode through a popular social media platform called Discord. Participants registered in sizable numbers on the official Phaseshift website and also through the offline campaigning which took place a week before Phaseshift kicked off. The winner received a cash prize of Rs 1000 along with a free access to classes on UI/UX design worth Rs 20000 from MAAC and vouchers worth 50% off on gate academy courses. The runners received a cash prize of Rs 500 along with vouchers worth 30% off on gate academy courses.

November 27, 2021: Glitch in the matrix

It was an online event conducted for PhaseShift 2021. The event was open to all colleges. The organizing committee and the participants were members from 2nd, 3rd and 4th year. The event was split into two parts: The Preliminary round and the Main round and participants had to take part in teams of two. The number of teams participating were 17. The event was a successful one and concluded with the group photo of all participants over Google meet.

Conferences and Journals by the Faculty

July 19, 2021:

"Analysis of Fingerprint Biometric Authentication Using CNN"
SSRN: https://ssrn.com/abstract=3874567
Authors: Preetha S, Sheela S V

Analysis of Fingerprint Biometric Authentication Using CNN

6 Pages • Posted: 19 Jul 2021

Preetha S
BMS College of Engineering - Department of Information Science and Engineering (ISE)

Sheela S. V.
BMS College of Engineering - Department of Information Science and Engineering (ISE)

Date Written: June 26, 2021

Abstract

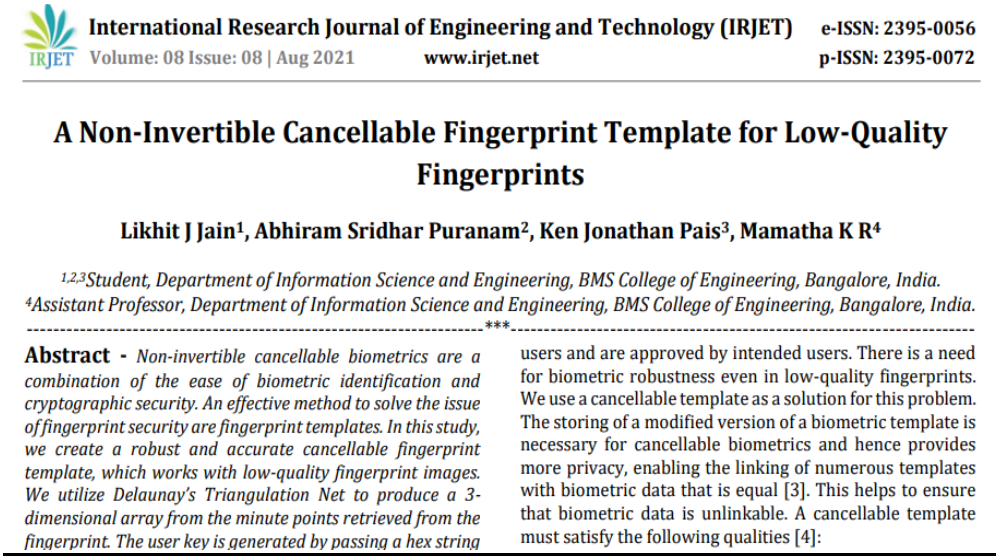
Biometrics defines the accurate distinctiveness of a person. Biological or behavioral characteristic data are extracted to distinguish humans. Development of IT technology intensifies the risk of hacking, hence there is rise in technologies using biometrics for authenticity. Fingerprint biometric is one of the most popular and widely used for authentication. The proposed system uses fingerprint at the matching score level for biometric identification. Convolutional neural networks (CNN) based fingerprint methodology is presented in

August 08, 2021:

“Twitter Sentiment Analysis of COVID-19 pandemic during lockdown phases in India”
https://ijsrem.com/volume-04-issue-08-august-2020/
Authors: Rashmi R, Shobana T S ,Monisha HM

August 10, 2021:

"A Non-Invertible Cancellable Fingerprint Template for Low-Quality Fingerprints", International Research Journal of Engineering and Technology (IRJET)Volume 08, Issue 08, e-ISSN: 2395-0056, Pages 486-491, August 2021.
https://www.irjet.net/archives/V8/i8/IRJET-V8I865.pdf
Authors: Mamatha K R, Likhit J Jain, Abhiram Sridhar Puranam, Ken Jonathan Pais



International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 08 Issue: 08 | Aug 2021 www.irjet.net p-ISSN: 2395-0072

A Non-Invertible Cancellable Fingerprint Template for Low-Quality Fingerprints

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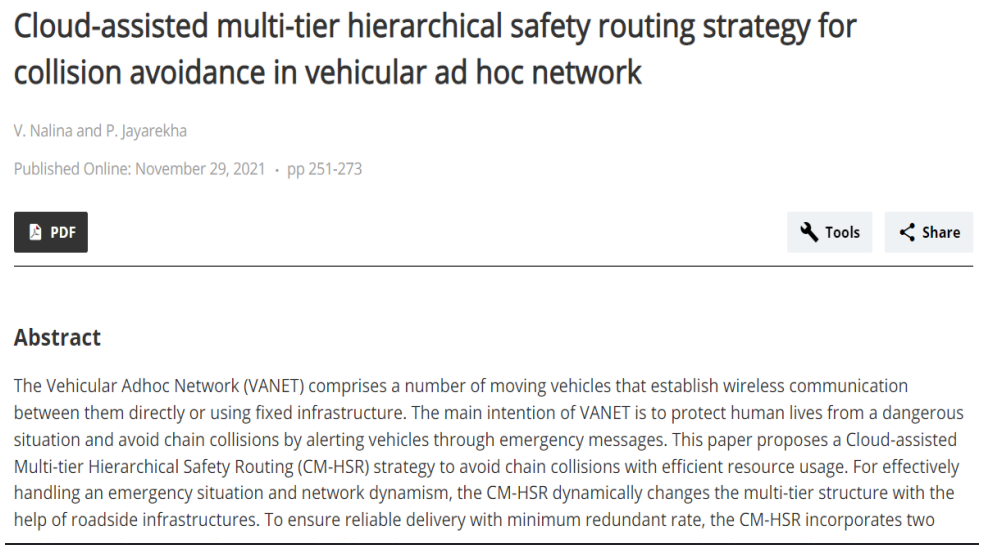
Abstract - *Non-invertible cancellable biometrics are a combination of the ease of biometric identification and cryptographic security. An effective method to solve the issue of fingerprint security are fingerprint templates. In this study, we create a robust and accurate cancellable fingerprint template, which works with low-quality fingerprint images. We utilize Delaunay's Triangulation Net to produce a 3-dimensional array from the minute points retrieved from the fingerprint. The user key is generated by passing a hex string* users and are approved by intended users. There is a need for biometric robustness even in low-quality fingerprints. We use a cancellable template as a solution for this problem. The storing of a modified version of a biometric template is necessary for cancellable biometrics and hence provides more privacy, enabling the linking of numerous templates with biometric data that is equal [3]. This helps to ensure that biometric data is unlinkable. A cancellable template must satisfy the following qualities [4]:

November 29, 2021:

"Cloud Assisted Multi-Tier Hierarchical Safety Routing Strategy for Collision Avoidance in Vehicular Adhoc network" in International Journal of Vehicle Information and Communication Systems, Inderscience Publications, Vol. 6, No. 3-4pp 251-273.
https://www.inderscienceonline.com/doi/abs/10.1504/IJVICS.2021.119594
Authors: Nalina V, Dr.P.Jayarekha



Cloud-assisted multi-tier hierarchical safety routing strategy for collision avoidance in vehicular ad hoc network

V. Nalina and P. Jayarekha

Published Online: November 29, 2021 · pp 251-273

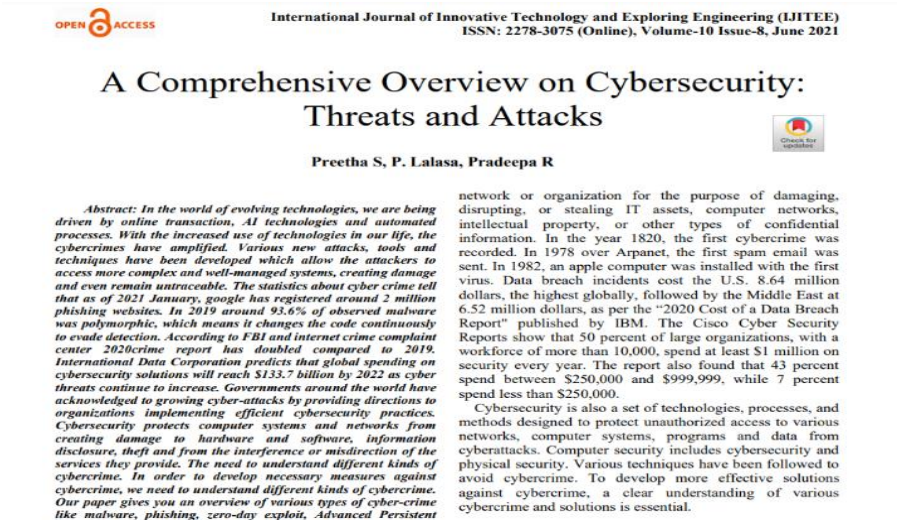
PDF Tools Share

Abstract

The Vehicular Adhoc Network (VANET) comprises a number of moving vehicles that establish wireless communication between them directly or using fixed infrastructure. The main intention of VANET is to protect human lives from a dangerous situation and avoid chain collisions by alerting vehicles through emergency messages. This paper proposes a Cloud-assisted Multi-tier Hierarchical Safety Routing (CM-HSR) strategy to avoid chain collisions with efficient resource usage. For effectively handling an emergency situation and network dynamism, the CM-HSR dynamically changes the multi-tier structure with the help of roadside infrastructures. To ensure reliable delivery with minimum redundant rate, the CM-HSR incorporates two

Student Publications in National/International Conferences/Journals

Names of the Contributors: Preetha, Arvindh S Kumar, Nishitha B N, Guru Darshan S
Publication Title: A Comprehensive Overview on Cybersecurity: Threats and Attacks
Name of the Conference/Journal: International Journal of Innovative Technology and Exploring Engineering (IJITEE)



International Journal of Innovative Technology and Exploring Engineering (IJITEE)
ISSN: 2278-3075 (Online), Volume-10 Issue-8, June 2021

A Comprehensive Overview on Cybersecurity: Threats and Attacks

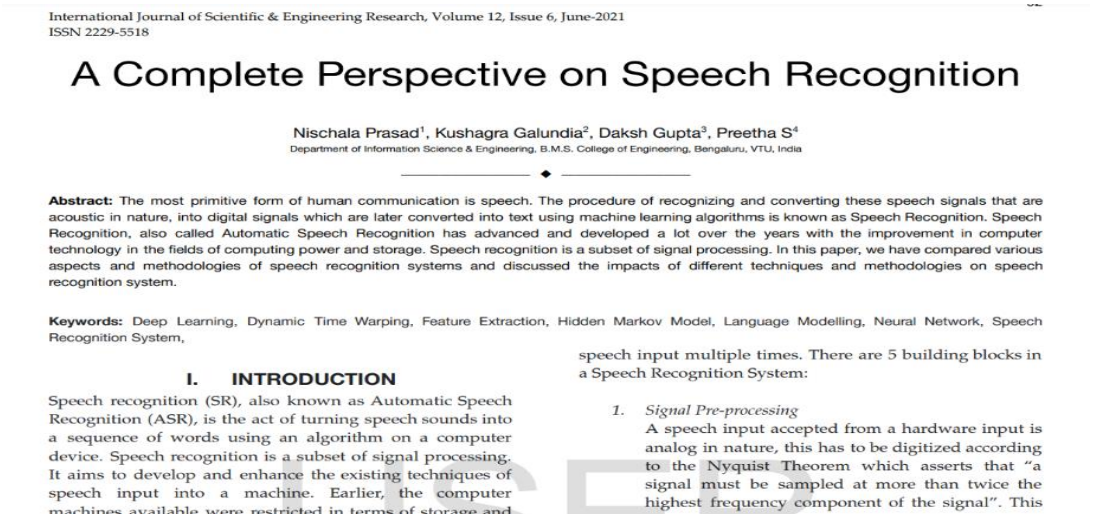
Preetha S, P. Lalasa, Pradeepa R

Abstract: In the world of evolving technologies, we are being driven by online transaction, AI technologies and automated processes. With the increased use of technologies in our life, the cybercrimes have amplified. Various new attacks, tools and techniques have been developed which allow the attackers to access more complex and well-managed systems, creating damage and even remain untraceable. The statistics about cyber crime tell that as of 2021 January, google has registered around 2 million phishing websites. In 2019 around 93.6% of observed malware was polymorphic, which means it changes the code continuously to evade detection. According to FBI and internet crime complaint center 2020crime report has doubled compared to 2019. International Data Corporation predicts that global spending on cybersecurity solutions will reach $133.7 billion by 2022 as cyber threats continue to increase. Governments around the world have acknowledged to growing cyber-attacks by providing directions to organizations implementing efficient cybersecurity practices. Cybersecurity protects computer systems and networks from creating damage to hardware and software, information disclosure, theft and from the interference or misdirection of the services they provide. The need to understand different kinds of cybercrime. In order to develop necessary measures against cybercrime, we need to understand different kinds of cybercrime. Our paper gives you an overview of various types of cyber-crime like malware, phishing, zero-day exploit, Advanced Persistent

network or organization for the purpose of damaging, disrupting, or stealing IT assets, computer networks, intellectual property, or other types of confidential information. In the year 1820, the first cybercrime was recorded. In 1978 over Arpanet, the first spam email was sent. In 1982, an apple computer was installed with the first virus. Data breach incidents cost the U.S. 8.64 million dollars, the highest globally, followed by the Middle East at 6.52 million dollars, as per the "2020 Cost of a Data Breach Report" published by IBM. The Cisco Cyber Security Reports show that 50 percent of large organizations, with a workforce of more than 10,000, spend at least $1 million on security every year. The report also found that 43 percent spend between $250,000 and $999,999, while 7 percent spend less than $250,000.

Cybersecurity is also a set of technologies, processes, and methods designed to protect unauthorized access to various networks, computer systems, programs and data from cyberattacks. Computer security includes cybersecurity and physical security. Various techniques have been followed to avoid cybercrime. To develop more effective solutions against cybercrime, a clear understanding of various cybercrime and solutions is essential.

Names of the Contributors: Preetha S, Nischala Prasad, Kushagra Galundia and Daksh Gupta
Publication Title: A Complete Perspective on Speech Recognition
Name of the Conference/Journal: International Journal of Scientific & Engineering Research (IJSER)



International Journal of Scientific & Engineering Research, Volume 12, Issue 6, June-2021
ISSN 2229-5518

A Complete Perspective on Speech Recognition

Nischala Prasad[1], Kushagra Galundia[2], Daksh Gupta[3], Preetha S[4]
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Abstract: The most primitive form of human communication is speech. The procedure of recognizing and converting these speech signals that are acoustic in nature, into digital signals which are later converted into text using machine learning algorithms is known as Speech Recognition. Speech Recognition, also called Automatic Speech Recognition has advanced and developed a lot over the years with the improvement in computer technology in the fields of computing power and storage. Speech recognition is a subset of signal processing. In this paper, we have compared various aspects and methodologies of speech recognition systems and discussed the impacts of different techniques and methodologies on speech recognition system.

Keywords: Deep Learning, Dynamic Time Warping, Feature Extraction, Hidden Markov Model, Language Modelling, Neural Network, Speech Recognition System,

I. INTRODUCTION

Speech recognition (SR), also known as Automatic Speech Recognition (ASR), is the act of turning speech sounds into a sequence of words using an algorithm on a computer device. Speech recognition is a subset of signal processing. It aims to develop and enhance the existing techniques of speech input into a machine. Earlier, the computer machines available were restricted in terms of storage and

speech input multiple times. There are 5 building blocks in a Speech Recognition System:

1. *Signal Pre-processing*
   A speech input accepted from a hardware input is analog in nature, this has to be digitized according to the Nyquist Theorem which asserts that "a signal must be sampled at more than twice the highest frequency component of the signal". This

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Name of the Conference/Journal: International Journal of Research in Engineering and Science (IJRES)

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Name of the Conference/Journal: International Journal of Advanced Scientific Technologies in Engineering and Management Sciences (IJASTEMS)

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Name of the Conference/Journal: International Journal of Advanced Trends in Engineering, Science and Technology.

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Publication Title: Green Computing Challenges and Strategies
Name of the Conference/Journal: International Journal of Advanced Trends in Engineering, Science and Technology

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Publication Title: The Green Internet of Things: A review
Name of the Conference/Journal: International Journal of Advanced Trends in Engineering, Science and Technology

Names of the Contributors: Dr. Sandeep Varma N, Ashutosh Kumar Tiwari
Publication Title: Learning Semantic Image Attributes Using Image Recognition and Knowledge Graph Embeddings
Name of the Conference/Journal: International Journal of Image, Graphics and Signal Processing

I.J. Image, Graphics and Signal Processing, 2020, 5, 44-52
Published Online October 2020 in MECS (http://www.mecs-press.org/)
DOI: 10.5815/ijigsp.2020.05.05

Learning Semantic Image Attributes Using Image Recognition and Knowledge Graph Embeddings

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Received: 07 April 2020; Accepted: 20 August 2020; Published: 08 October 2020

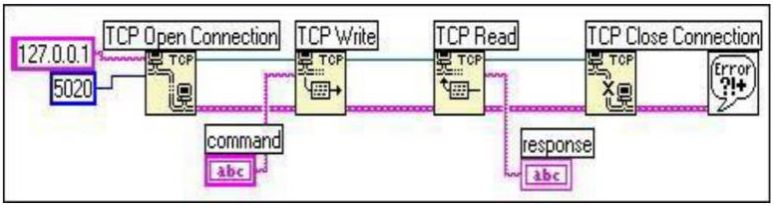
Abstract: Extracting structured knowledge from texts has traditionally been used for knowledge base generation. However, other sources of information, such as images can be leveraged into this process to build more complete and richer knowledge bases. Structured semantic representation of the content of an image and knowledge graph embeddings can provide a unique representation of semantic relationships between image entities. Linking known entities in knowledge graphs and learning open-world images using language models has attracted lots of interest over the years. In this paper, we propose a shared learning approach to learn semantic attributes of images by combining a

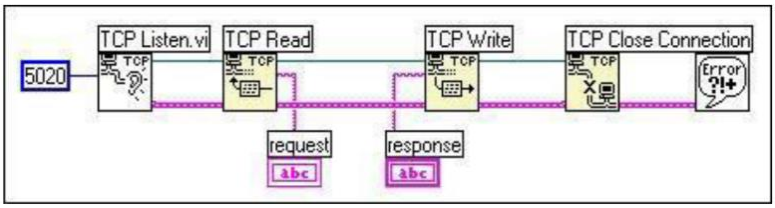
ARTICLES

INSIGHTS TO GRAPHICAL PROGRAMMING

Graphical programming languages provide a different method of coding. Instead of the high-level statements in procedural languages, like C and Object-Oriented languages like C++ or Java, graphical languages are coded by selecting objects, connecting them, and adding functionality. High-level languages allow programmers to concentrate on the tasks at hand when creating software. The programs are written using the specified statements and must be built and linked to produce an executable file containing machine code. The code is stepped through and guides the processor to conduct actions; data is accessed or saved in memory as needed when the code is run. Graphical languages usually are developed using a graphical interface, where elements are selected and the underlying sections, where functionality is added. The graphical approach to programming allows a computer to process spatial representations in two or more dimensions. LabVIEW, a graphical programming workbench is a product of National Instruments (NI). It requires licenses, although student and trial packages are available. LabVIEW was designed to support a laboratory environment and is targeted to applications to control and monitor equipment. To support this effort, NI has a wide selection of hardware interfaces and meters to enable LabVIEW programs to monitor and control electronic equipment. Signals from the hardware interfaces can be read directly by the program and the data acted upon. There are also simulation controls, file read/write and circuit controls. Knowing the engineering behind the process to be controlled and measured is as important as knowing LabVIEW. Internet Protocol (IP), User Datagram Protocol (UDP), and Transmission Control Protocol (TCP) are the basic tools for network communication. The name TCP/IP comes from two of the best-known protocols of the internet protocol suite, the Transmission Control Protocol and the Internet Protocol. With TCP/IP you can communicate over single networks or interconnected networks (Internet).

TCP Client





TCP Server

Coding a client and server using C or Python might definitely not end up as an easy job for any beginner. However, following block diagrams are the graphical code for TCP client and server using TCP Client.

Use the TCP/IP functions located on the Functions»Data Communication»Protocols»TCP palette for TCP communication in LabVIEW. The process involves opening the connection, reading and writing the information, and closing the connection. With most I/O communication, the processor is always the client that initiates a connection to the disk drive server, the external instrument server, or the DAQ board server. The block diagrams represent a client application that initiates a connection to a remote server with TCP Open Connection. The server listens for remote connections and responds appropriately.

WORD2VEC IN NLP

*"The tailor showed her how to sew a **button** onto her jacket. Meanwhile, her friend waited outside looking at the elevator **buttons**."*

As humans, it is instinctive to notice the different meanings of the word "Button" in the above two sentences. But how can a machine learning model achieve this? The first task of anyone working with Natural Language is to represent words as numbers. Many techniques such as One-Hot encoding, TF-IDF, N-grams have been used over the past decade. But these techniques fail to incorporate word semantics and are often sparse representations. This article introduces a word embedding technique called Word2Vec.

What is Word2Vec?

Word2Vec is a state-of-the-art algorithm to generate fixed length distributed vector representation of all the words in a huge corpus. The effectiveness of Word2Vec is due two reasons — One, the use of fixed size vectors which means the vector size does not depend on the number of unique words in the corpus. Second, incorporating semantic information in the vector representations. Word2Vec vectors are highly efficient at grouping similar words together. The algorithm can make strong estimates based on the position of the word in the corpus.

As an example, "King" and "Queen" have a relationship with one another, with algebraic operations on generated vectors of these words we can find close approximation of similarities between these words. Word2Vec can be implemented in two architectures — Continuous Bag of Words (CBOW) and Skip-Gram. The main idea of Word2Vec revolves around predicting the context (outside) words based on a center word or vice versa in a fixed size window.

```
[King]  -  [Man]  +  [Woman]  =  [Queen]
```

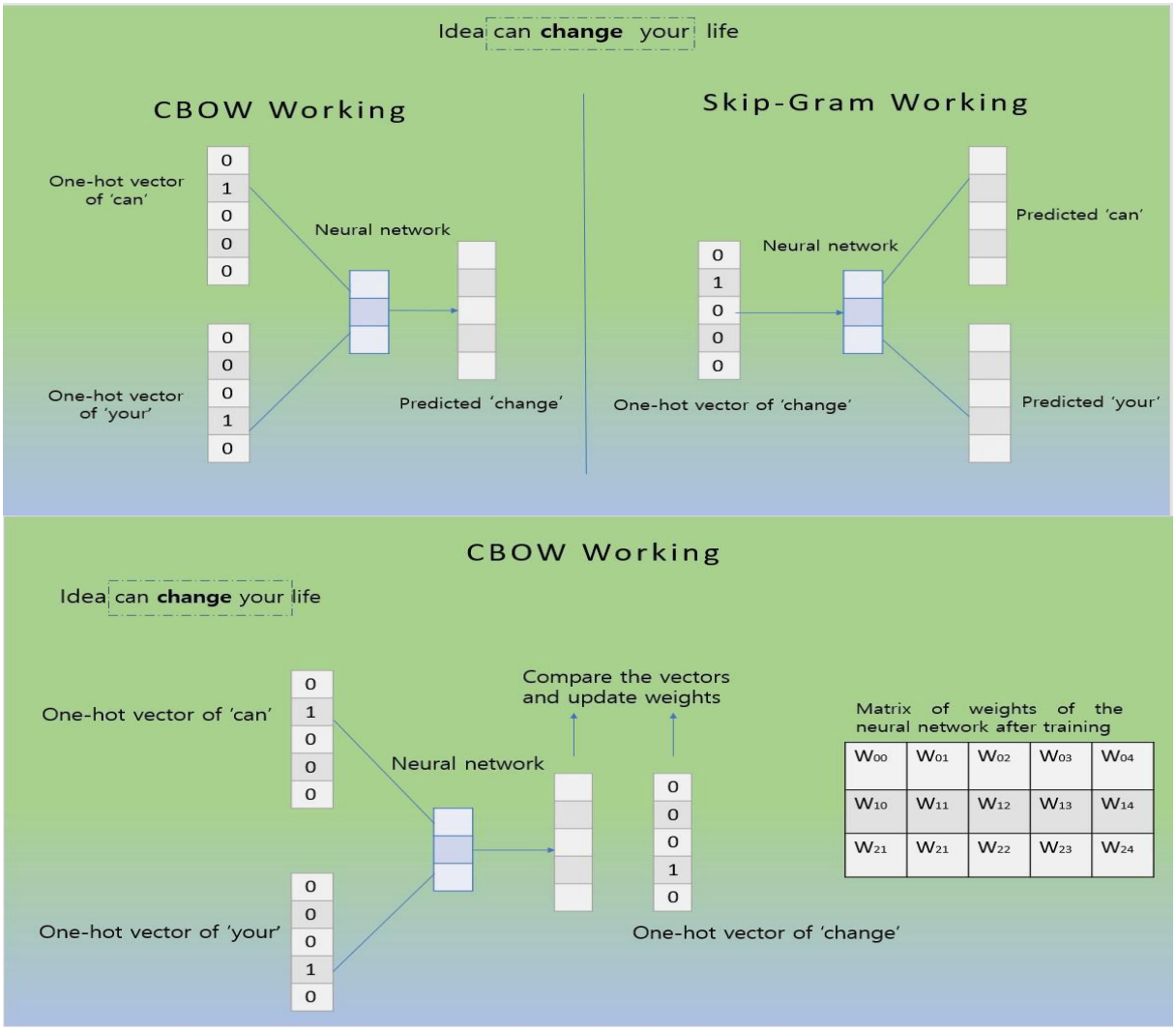
CBOW Model

This is quite similar to the Feedforward Neural Net Language Model architecture. This model is used to produce word embeddings by using n future and n past words. The word in the middle of the window is predicted using distributed representations of context. The order of the word doesn't influence the projection, so it's referred to as the bag of word, further unlike the standard bag of word model, this uses continuous distributed representation of the context. So, this model is denoted as a continuous bag of word mode.

Skip-Gram Model

While the CBOW model is predicting the middle word given a set of surrounding words while the skip-gram model does the vice versa. More precisely, it takes each current word as an input to a log-linear classifier with continuous projection layer, and predicts n past and n future words. It has

been proven that expanding the range enhances the quality of the resultant word vectors while simultaneously increasing processing complexity.



For example: …. possibility of having a dream come true that makes life interesting….

In this example, with a fixed window of 3, let "come" be the centre word and "dream" and "true" be the outside words. CBOW predicts the probability of dream and true given the centre word come and Skip-Gram predicts the centre word come, given the context words dream and true.

- CBOW — Predicts the centre word based on the context (outside) words.
- Skip-Gram — Predicts the context words based on the centre word

How are the final Vectors formed?

After training the neural network with the above objective function, weights are obtained for each window. These weights are stored in a matrix. To obtain the final dense vectors of each word, the weight matrix is multiplied by the corresponding One-Hot vector of each word.

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