



# Bhoj Reddy Engineering College for Women

(Sponsored by Sangam Laxmibai Vidyapeet, Approved by AICTE and Affiliated to JNTUH)  
Vinaynagar, IS Sadan Crossroads, Saidabad, Hyderabad-500 059, Telangana. [www.brecw.ac.in](http://www.brecw.ac.in)

## Department of Computer Science and Engineering



# Sparkles 2022

**Volume 4**



*Creativity is just connecting things..!*

TECHNICAL MAGAZINE



## Founders of Sangam Laxmibai Vidyapeet

Sangam Laxmibai Vidyapeet is a voluntary social action group working for empowerment of women and girls. Registered under the Andhra Pradesh Societies Registration Act, It is a not-for-profit organization working in the field of education since 1952.

The Management of the Vidyapeet makes every effort to fulfill the vision of its founders K V Ranga Reddy, Sangam Laxmibai, Mamidi Bhoj Reddy, Bojjam Narsimhulu, Pasham Papaiah, A Shyamala Devi, P Lalitha Devi, B Ramdev, M H Guptha who are no more with us.

### Sangam Laxmibai Vidyapeet

Established in 1952



**K V Ranga Reddy**  
(1890-1970)  
Founder President



**Sangam Laxmibai**  
(1911-1979)  
Founder Secretary



**M Bhoj Reddy**  
(1919-2001)  
Founder Treasurer

### The Vidyapeet manages 5 Educational institutions for Girls and Women

- M H Guptha High School for Girls
- Sangam Laxmibai Junior College for Girls
- K V Ranga Reddy Degree College for Women
- Bojjam Narsimhulu Pharmacy College for Women
- Bhoj Reddy Engineering College for Women





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### About BRECW

Bhoj Reddy Engineering College for Women is run by Sangam Laxmibai Vidyapeet, which has 72 years of experience in the field of education.

BRECW was established in the year 1997 and it is managed by an executive committee consisting of persons with a vast experience in the field of education. Within a short period, it has emerged as one of the premier Engineering colleges in the state.

The College campus has the unique advantage of being located in the heart of the city and yet free from noise and dust pollution. With considerable open space and greenery spread over 6.5 acres of land, the campus provides an ideal ambience for the engineering education of girls.

The academic performance of our students has been consistently outstanding with a pass percentage of 85 to 90.

#### BRECW Vision

BRECW develops confident and articulate young women into dynamic Engineers equipped with skills, knowledge, values and an attitude to contribute to the society.

#### BRECW Mission

- BRECW is committed to providing a challenging, enriching, safe and supportive technical learning environment through its core values of responsibility, respect and compassion.
- Fosters intellectual, spiritual and personal development of young women so that they develop the tools necessary to lead meaningful lives.
- Offers academic curriculum along with an extensive co-curricular program with the support of dedicated staff who ensure that students identify their strengths and develop their skills such as teamwork, leadership, creativity and entrepreneurship.
- Develops independent, adaptable thinkers with a passion for learning, courage to take risks and initiative to apply what is learned.



## Department of Computer Science and Engineering (CSE)

The future of computing systems and information systems rests with the engineers in Computer Science and Engineering (CSE). The Course is meant to advance, evolve and enhance computer science and computing engineering fundamentals to build the intellectual and research capital in the domains of science, engineering and technology. The Course endeavors to equip the CSE in development of computing and IT systems and their proper applications. This has become the core branch of Engineering with all branches depending on it. The department has well established computer laboratories.

### Department Vision



- To become a center of excellence in the field of Computer Science and Engineering.
- To produce competent, confident, innovative and socially responsible engineers with an ability to serve the society.

### Department Mission



- To impart high quality professional training at the undergraduate level with an emphasis on basic principles of Computer Science and Engineering.
- To pass on moral qualities and ethical values to the students.
- To empower the students with the required skills to solve technical problems of modern society.
- To make learning process exciting, stimulating, interesting and exposing students to broad research areas.

### South Block



**CSE**

**Ground Floor  
&  
First Floor**



## Programme Outcomes (PO's)

### 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 modelling 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.

## Program Specific Outcomes (PSO's)

**PSO I:** Identify suitable data structures and algorithms to design and develop computing solutions for real-life problems.

**PSO II:** Able to excel in various programming, project competitions and technological challenges laid by professional societies.



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## Principal's Message

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**Dr J Madhavan**

ME, Ph.D, MISTE, MIE,

Principal

Email: [principal.brecw32@gmail.com](mailto:principal.brecw32@gmail.com)

Dear Students,

Bhoj Reddy Engineering college for Women (BRECW) has always evolved while maintaining the fundamentals of an outstanding education for our students. BRECW is committed to providing the best possible environment which encourages and celebrates student's academic achievements and love for learning. Our academic results manifest our vision for providing excellent teaching and learning methodologies. Our faculty team motivates students to develop skills specific to their career path and imperative for future job success.

Extra curricular activities stimulates students to discover and develop their unique talents and healthily building self-esteem as they try new things and learn how they are uniquely talented.

Our technical magazine, Mindsplash 2021-22 showcases such student generated extra curricular content which is designed and edited by students. My sincere appreciation to editorial and advisory members for their efforts in bringing out this technical magazine.



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## HOD's Message

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**Mrs K Usha Rani**

M.Tech (CSE)

HOD-CSE

Email: [hod.cse.brecw@gmail.com](mailto:hod.cse.brecw@gmail.com)

Greetings! On behalf of staff and students of the Department of Computer Science and Engineering of Bhoj Reddy Engineering College for Women (BRECW) at Hyderabad.

Department of Computer Science and Engineering (CSE) is the centre of excellence providing in-depth technical knowledge and opportunities for innovation and scalable with up-to-date computer facilities at par with top engineering colleges in Telangana.

Ever since its inception in the year 1997 with an initial intake of 40 seats in B. Tech, the department has grown by leaps and bounds, not only in terms of quantity but also in terms of quality. Currently CSE department has an intake of 120 seats in B. Tech.

The department gives exposure to its students, about regular engineering curriculum as well as prepare them to face the challenges of today's corporate world, by inculcating a professional attitude in them. The highly qualified, immensely diligent and experienced faculty is continuously involved in developing the skill set of the students in core courses like Programming, Emerging Technologies, Professional Ethics, Open Source Technologies and as well as hands on experience. All the Very Best to all students.



# FACULTY CONTRIBUTION

## List of Workshops/FDP/Refresher courses attended for Academic year 2021-22

### **M Vineela - Associate Professor**

- 2 days Quality in Engineering Education-An Outcome Based Education (OBE) approach at VNR Vignana Jyothi Institute of Engineering and Technology 26-02-2021 to 27-02-2021.
- 12 Days Cyber Security and Block Chain Technology Srinivasa Ramanujan Institute of Technology 4-06-2021 to 26-06-2021.
- 6 Days Role of Machine Intelligence for Information Retrieval GMR Institute of Technology 06-07-2021 to 11-07-2021.
- 6 Days Multi Technology Vasavi College of Engineering 28-06-2021 to 03-07-2021.
- 6 Days Advancement in AI and ML The Oxford College of Engineering 12.07.2021 to 17.07.2021.
- 6 days Advancements in Security using Deep Learning GMR Institute of Technology and Velagapudi Ramakrishna Siddhartha Engineering College 21 March 2022 to 25 March 2022.

### **K Shireesha - Associate Professor**

- 6 Days One Week Webinar Series on Emerging Research trends in CSE SRM UNIVERSITY OF SCIENCE AND TECHNOLOGY 23.8.21 to 29.08.2021.
- 6 Days Advancement in AI and ML The Oxford College of Engineering 12.07.2021 to 17.07.2021.

### **N Sudha Laxmaiah- Assistant Professor**

- 6 Days Advancements of Artificial Intelligence and Machine Learning The Oxford College of Engineering 12-07-2021 to 17-07-2021

### **AVS Radhika- Assistant Professor**

- 7 Days Emerging Research Trends in Computer science and technology SRM Institute of Science and Technology 23-8-2021 to 29-8-2021.
- 5 days Advancements in AI and ML Oxford College of Engineering, Bangalore, 12 July 2021-17 July 2021.
- 7 Days Deep learning and Machine learning application in computer vision GMR Institute of Technology 26th to 30th July 2021.
- Two Days Machine Learning using Python BRECW 23-24 Nov 2021



## P Deepthi- Associate Professor

- 5-Day National level Online Faculty Development Program on “Mentoring for institutional social responsibilities and facilitation for community engagement” Organised by MGNCRE in association with Ministry of Education. Hyderabad, 07th March 2022 – 11th March 2022.
- One Week Online Faculty Development Program on “Deep Learning and Machine Learning application in Computer vision”, Organized by department of IT, GMR Institute of Technology, Rajam, AP, 26th July 2021 – 30th July 2021.
- 8 Weeks AICTE recognized FDP course on “Compiler Design” NPTEL Online Certification Course, January 2022 – April 2022.
- 8 Weeks AICTE recognized FDP course on “Introduction to Machine Learning” NPTEL Online Certification Course, July 2022 – September 2022.
- 2 Weeks AICTE recognized Online refresher course on “Artificial Intelligence” completed successfully with A+ grade, 23 May 2022- 4 June 2022.

## P Sumalatha- Associate Professor

- Comparison of Modified Pollard rho for Discrete Logarithm Problem with the Original, vol. 4, no. 9, pp. 233–238 International Journal of Research in Engineering, Science and Management, ISSN (Online): 2581-5792 September 2021
- 6 Days Online Faculty Development Program on Multi Technology Vasavi college of Engineering 28 June to 03 July 2021
- 5 Days Deep Learning and Machine Learning Application in Computer Vision GMR Institute of Technology 26 July to 30 July 2021
- 2 Days Machine Learning using Python Bhoj Reddy Engineering College for Women 23 November to 24 November 2021





# FACULTY CONTRIBUTION

## Optimization of Android Malware Detection Using Ensemble Machine Learning

### Paper Details:

**Website:** [www.ivyscientific.org](http://www.ivyscientific.org)

**Journal Name:** Industrial Engineering Journal ,ISSN: 0970-2555

**Published in:** Volume : 15, Issue : 11

**Publication Date:** October 2022

**Page(s):** 636-643

### Abstract:

In most countries, Android is the most popular platform, but it has struggled to overtake Apple in Japan and the US. It has a market share of over 85% in countries including Turkey, Iran, Brazil, India, and Indonesia. Network ecosystems are growing more and more susceptible to different attacks as a result of the rising number of devices originating from various sources. Android's default installation package is called Android Package (APK). In terms of malware and other attacks, APK files have numerous weaknesses. The primary goal of this research is to identify malware in android APK files in order to better anticipate attacks that exploit a variety of vulnerabilities. The study effort uses a variety of strategies, including the Random Forest Approach, Support Vector Classifier, Regression, and Ensemble ii Learning Based approaches, to get multi-dimensional results. Security issues are becoming more and more important due to the rise in smartphone apps and the broad use of Android by mobile users. These issues must be resolved in order to recognise and prevent vulnerabilities. This technique can be used to link users of mobile apps to a notice about certain risks. Mobile device users can swiftly install APK files from numerous sources without encountering any unfavourable effects. It is necessary to create and put into use a system and algorithm for anticipating dangerous code in Android APKs.



**Ms P Sumalatha**

M.Tech (CSE), [Ph.D]

Associate Professor, BRECW.



# FACULTY CONTRIBUTION

## Ensemble ML Algorithm and Effective Android Malware Forecast Utilization

### Conference Details:

**Conference Name:** International Conference on Electrical, Electronics & Computers (ICEEC)-2022

### Abstract:

Malicious are intended to upset, impair, or assume responsibility for a PC framework. Android malware (AM) extraordinarily puts over operating system of Android through spillage at classified data and slamming the framework. A few endeavours have been made to identify Android malware (AM). Notwithstanding, it works can't recognize malware consequently and the vast majority of them are mark based which can't distinguish knew dissimilarity of malicious. At this process, it can be investigated various calculations to acquire the good calculation for malicious expectation, also to get the arrangement of elements in a best possible way to help in foreseeing malware productively. As from examination, this can obtained the outfit techniques methods of Ensemble are superior to customary physical inclining calculations for foreseeing malware. This can be decreased the quantity of provisions from 200 to 90 accomplishing an exactness of 98.6 % utilizing Gradient boosting machine frame-work by this process it can carried an exactness of 98.2.% utilizing Random Forest having just 50 components.



**Ms P Sumalatha**  
M.Tech (CSE), [Ph.D]  
Associate Professor, BRECW.



# FACULTY CONTRIBUTION

## Comparison of Modified Pollard Rho for Discrete Logarithm Problem with the Original

### Paper Details:

**Journal Name:** International Journal of Research in Engineering, Science and Management

**Published in:** Volume 4, Issue 9, September 2021

**Paper link:** <https://www.ijresm.com> | ISSN (Online): 2581-5792

### Abstract:

Elliptic Curve cryptosystems require small key size to implement public key cryptosystems and appear to be more secure and efficient. The security of Elliptic Curve cryptosystems is based on the difficulty of solving Elliptic Curve Discrete Logarithm Problem (ECDLP). The underlying basis of the many popular Public Key Scheme like Diffie-Hellman and ElGamal is Elliptic Curve Discrete Log Problem (ECDLP). The strength of such public key schemes is predicated on the problem of solving the ECDLP. The best methods for solving ECDLP has time complexity exponential within the size of the underlying field. ECDLP is based on Cryptosystems are popular as they provide good security at key sizes much smaller than number theoretical Public Key Schemes like RSA cryptosystem. ECDLP based cryptosystems are widespread in use, continuous efforts are being done on monitoring the effectiveness of latest attacks or improvements on existing attacks on ECDLP over large field. This paper shows a variant of generic algorithm Pollard's Rho for locating ECDLP using cycle detection with stack and a mix of cycle detection and random walks. Pollard's Rho algorithm using cycle detection with stack requires lesser number of iterations than Pollard's Rho original algorithm in finding the collision. The iteration function used in Pollard's Rho algorithm is not random enough (Knuth, 1969), So Teske proposed a better iteration function by applying more arbitrary multipliers. Random walks allow the iteration function to act randomly than the primary iteration function, thus, the Pollard rho method performs more efficiently than the original. The experiment results show that the proposed methods decrease the number of iterations and speed up the computation of discrete logarithm problem on elliptic curves.



**Ms P Deepthi**

M.Tech (SE), [Ph.D]

Associate Professor, BRECW.



# FACULTY CONTRIBUTION

## Elliptic Curve Cryptography using Authenticated Encryption

### Paper Details:

**Journal Name:** International Journal of Engineering Research and Applications

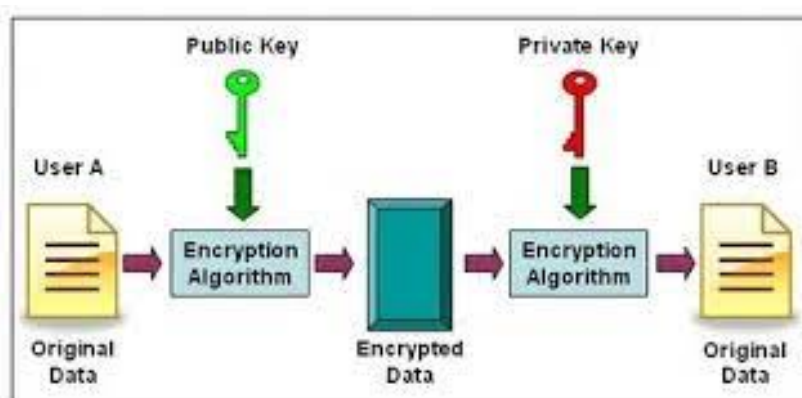
**Published in:** Vol. 12, Issue 4, (Series-IV) April 2022

**Website link:** www.ijera.com, ISSN: 2248-9622

**Page No:** pp. 35-40

### Abstract:

Asymmetric encryption is used by many applications to provide secure communication between two parties. Asymmetric encryption uses more memory and require more computation. Elliptic Curve Cryptography (ECC) is an asymmetric cryptographic technique that is widely in use on small computational devices because it has the effect of using a strong cryptographic mechanism to generate small keys. ECC is used in a variety of devices, like sensors, Internet of Things (IoT), etc., [3], to reduce power consumption and improve device performance. ECC is strong to implement for the secure communication, if the information is encoded on an Elliptic curve. Equally important is ensuring that ECC maps the message on to the elliptic curve which can be used for encryption. The goal of this work is to provide authenticated encryption for encoding message and map the message on to the curve.



**Ms P Deepthi**  
M.Tech (SE), [Ph.D]  
Associate Professor, BRECW.



# FACULTY CONTRIBUTION

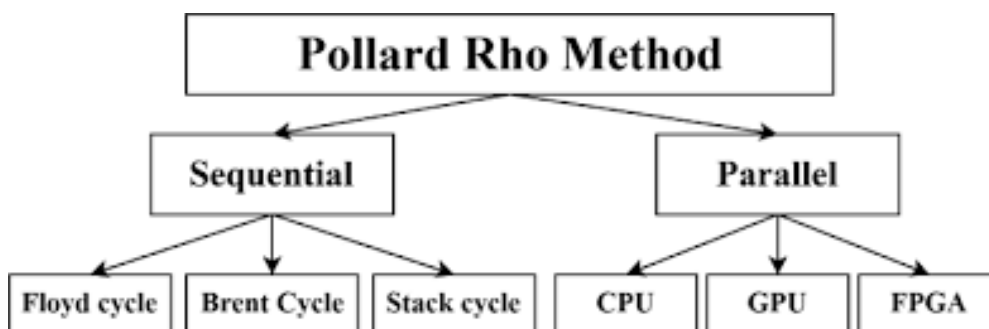
## Comparison of Pollard's Rho Algorithm Based on Cycle Finding Methods

### Paper Details:

**Conference Name:** Intelligent Computing and Communication Proceedings of 6th ICICC 2022

### Abstract:

The cryptosystems which require small key size to implement a public key cryptosystem, and which are more efficient and secure are elliptic curve cryptosystems. Many public key schemes such as Diffie–Hellman and El Gamal schemes solve the elliptic curve discrete logarithm problem (ECDLP). The security of the Elliptic Curve Cryptographic System depends on the difficulty of the elliptic curve discrete logarithm problem (ECDLP). The major attention of any public key systems is the problem to solve ECDLP. Best way to solve ECDLP is to have an exponential time complexity of within the underlying field size. This study shows comparison of Pollard's rho algorithm based on cycle finding methods and parallelization.



**Ms P Deepthi**

M.Tech (SE), [Ph.D]

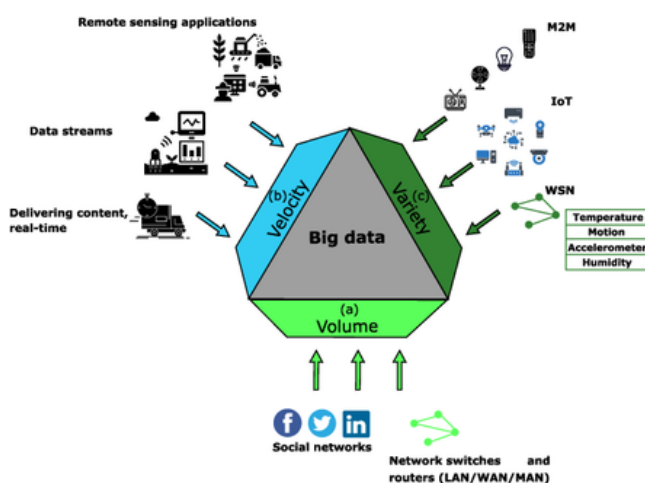
Associate Professor, BRECW.

# STUDENT CONTRIBUTION

## The Role of AI, Machine Learning, and Big Data in Digital Twinning: A Systematic Literature Review, Challenges, and Opportunities

### Abstract:

Digital twinning is one of the top ten technology trends in the last couple of years, due to its high applicability in the industrial sector. The integration of big data analytics and artificial intelligence/machine learning (AI-ML) techniques with digital twinning, further enriches its significance and research potential with new opportunities and unique challenges. To date, a number of scientific models have been designed and implemented related to this evolving topic. However, there is no systematic review of digital twinning, particularly focusing on the role of AI-ML and big data, to guide the academia and industry towards future developments. Therefore, this article emphasizes the role of big data and AI-ML in the creation of digital twins (DTs) or DT-based systems for various industrial applications, by highlighting the current state-of-the-art deployments. We performed a systematic review on top of multidisciplinary electronic bibliographic databases, in addition to existing patents in the field. Also, we identified development-tools that can facilitate various levels of the digital twinning. Further, we designed a big data driven and AI-enriched reference architecture that leads developers to a complete DT-enabled system. Finally, we highlighted the research potential of AI-ML for digital twinning by unveiling challenges and current opportunities.



By:

18321A0504- A Akshitha

18321A0522- E Harshita Sharma



# STUDENT CONTRIBUTION

## Cloud Computing & the Legal Arena: Digitization of Courts during Covid-19

### Abstract:

There are numerous impressions of the Coronavirus pandemic on law and its enterprises and activities, including the closure of law practices and courts, the decline in services, the lack of clienteles, the withdrawal of client schedules and settlements, the decline in the accessible workforce owing to the virus or social distancing, and the struggle of holding unambiguous appointments and services. Therefore, the law as an arena has holistically changed in order to integrate technology in order to cope with the everchanging digital world. This paper highlights the use of cloud computing as part of digitization of the legal profession while emphasizing the advantages as well as its risks. It will also discuss CaseLines, a cloud-computing software that is increasingly becoming popular to conduct Court online. Various jurisdictions such as DIFC, South Africa, Canada, England and Wales, etc. has employed the use of Cloud-based evidence management systems to ensure the delivery and processes of justice, which is one such use of Cloud Computing.



By:

18321A0552- B Nikshiptha

18321A0550- Ch Nikhitha



# STUDENT CONTRIBUTION

## Re-Engineering of A Virtual Igbo Keyboard In Standard Orthography Using Android Software Development Tool Kit

### Abstract:

Localizing on-screen keyboard for communication in Igbo Language has brought about the existence of various Igbo keyboard on Android Operating System Platforms. Thus, the development of an Igbo Keyboard in Standard Orthography for Android mobile devices called AmandaX, which incorporates both the English Alphabet in QWERTY layout and the full Igbo alphabets in WERTY layout displayed in two different interfaces. This thesis made use of the ASCII (American standard code for information interchange) and Unicode Character sets to represent the development of the Igbo alphabets. It is hosted using the Android software development tool kit. Programming tools employed are Android Studio, Android software Development Kit, Android Virtual Device Manager (AVD), Eclipse Integrated Development Environment, Java Development Kit (JDK), and Adobe XD and Photoshop for the graphics. The result gives a user-friendly virtual keyboard which encompasses all the Igbo alphabets, their accents, and the diagraph consonants. One of the key benefits of AmandaX include masking passwords by allowing the user to use these Igbo accent characters for strong password creation. Also, individuals can now write quickly and communicate freely using this AmandaX.



By:  
18321A0569- N Rohini  
18321A0588- P Shirisha

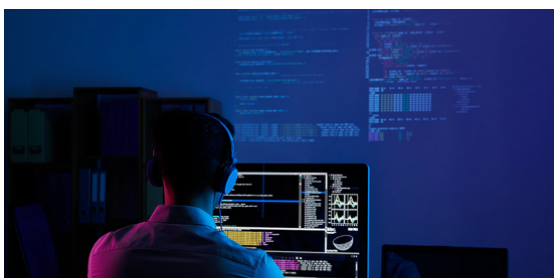


# STUDENT CONTRIBUTION

## Scalable Second Order Optimization for Deep Learning

### Abstract:

Optimization in machine learning, both theoretical and applied, is presently dominated by first-order gradient methods such as stochastic gradient descent. Second-order optimization methods, that involve second derivatives and/or second order statistics of the data, are far less prevalent despite strong theoretical properties, due to their prohibitive computation, memory and communication costs. In an attempt to bridge this gap between theoretical and practical optimization, we present a scalable implementation of a second-order preconditioned method (concretely, a variant of full-matrix Adagrad), that along with several critical algorithmic and numerical improvements, provides significant convergence and wall-clock time improvements compared to conventional first-order methods on state-of-the-art deep models. Our novel design effectively utilizes the prevalent heterogeneous hardware architecture for training deep models, consisting of a multicore CPU coupled with multiple accelerator units. We demonstrate superior performance compared to state-of-the-art on very large learning tasks such as machine translation with Transformers, language modeling with BERT, click-through rate prediction on Criteo, and image classification on ImageNet with ResNet-50.



By:

18321A05A4- G Srilekha

18321A05C0- Zohra Nausheen



# STUDENT CONTRIBUTION

## 3D Image Processing using Machine Learning based Input Processing for Man-Machine Interaction

### Abstract:

In various real time applications, several assisted services are provided by the human-robot interaction (HRI). The concept of convergence of a three-dimensional (3D) image into a plane-based projection is used for object identification via digital visualization in robotic systems. Recognition errors occur as the projections in various planes are misidentified during the convergence process. These misidentifications in recognition of objects can be reduced by input processing scheme dependent on the projection technique. The conjoining indices are identified by projecting the input image in all possible dimensions and visualizing it. Machine learning algorithm is used for improving the processing speed and accuracy of recognition. Labeled analysis is used for segregation of the intersection without conjoined indices. Errors are prevented by identifying the non-correlating indices in the projections of possible dimension. The inputs are correlated with related inputs that are stored with labels thereby preventing matching of the indices and deviations in the planes. Error, complexity, time and recognition ratio metrics are verified for the proposed model.



By:  
19321A0502- P Aishwarya  
19321A0556- J Nikitha



# STUDENT CONTRIBUTION

## Public Health Infrastructures and National Security - Ian Wardel

### Abstract:

Hospitals in the United States and other comparable countries are lacking the modern security many people assume they have, in reality many of these institutions lack the necessary cyber security personal to defend their networks, and do not invest enough into the development of new infrastructure. With the advancement of high speed, long range wireless networking, and regulations such as the Health Insurance Portability and Accountability Act (HIPPA) and the Health Information Technology for Economic and Clinical Health (HITECH), hospitals have begun to adopt digital Electronic Health Records (EHR)'s to maintain much of their patient data. Unfortunately, Electronic Health Records (EHR)'s contain large quantities of data which makes hospitals prime targets for cybercriminals so much so that "half of pharmaceutical and life science organizations experienced a breach of security within a 12-month time span". With these threats increasing, it is important for hospitals to understand what can be done now to protect themselves, and what they can expect to do in the future based on current technical trends.



By:

19321A0580- G Sai Sri

19321A05A7- K Srinidhi



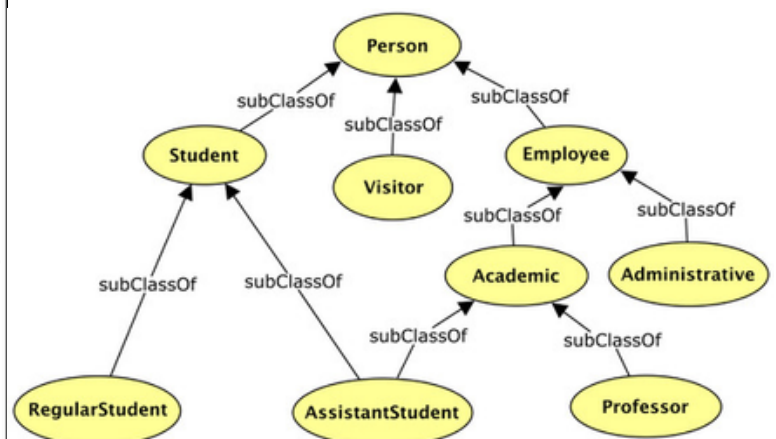
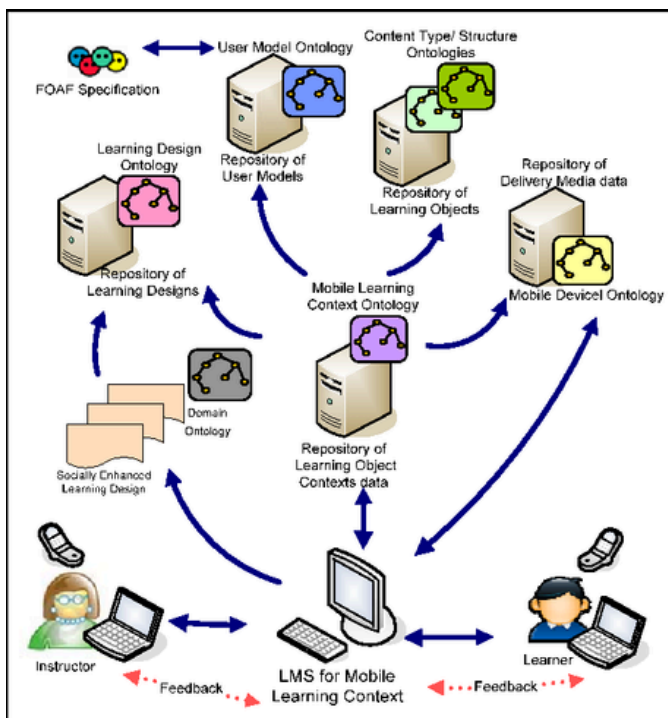
# STUDENT CONTRIBUTION

## CONTEXT ONTOLOGY IN MOBILE APPLICATIONS

### Abstract:

Mobile applications are expected to receive context input such as location, speech, and network from different context providers. Since context can be considered as knowledge, a formal method is needed to capture this knowledge. There is less work on ontology model that could be reused to model a new context ontology for Android mobile application. Therefore, this study proposed an ontology specifically for Android mobile application, COCCC, to formalize context knowledge present within it. METHONTOLOGY method was used to create COCCC ontology as it offers intermediate representation in the form of concepts. The concepts from the context ontology were extracted from various resources, sorted and categorized based on types and functions for standardization purposes. Survey was given to five domain experts for evaluation of COCCC ontology in terms of its usability. Data from these experts were analyzed and the results have confirmed that the proposed context ontology is usable to Android mobile application developers.

### System Architecture



By:

18321A0573- S Gayatri

18321A0598- T Sravanthi



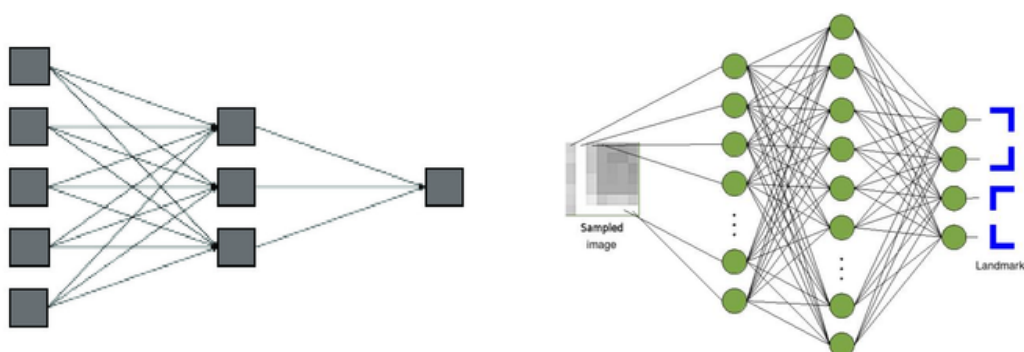
# STUDENT CONTRIBUTION

## A Power Efficient NN Implementation on Heterogeneous FPGA and GPU Devices

### Abstract:

Deep neural networks (DNNs) have seen tremendous industrial successes in various applications, including image recognition, machine translation, audio processing, etc. However, they require massive amounts of computations and take a lot of time to process. This quickly becomes a problem in mobile and handheld devices where real-time multimedia applications such as face detection, disaster management, and CCTV require lightweight, fast, and effective computing solutions. The objective of this project is to utilize specialized devices such as Field Programmable Gate Arrays (FPGAs) and Graphics Processing Units (GPUs) in a heterogeneous computing environment to accelerate the deep learning computations with the constraints of power efficiency. We investigate an efficient DNN implementation and make use of FPGA for fully-connected layer and GPU for floating-point operations. This requires the deep neural network architecture to be implemented in a model parallelism system where the DNN model is broken down and processed in a distributed fashion. The proposed heterogeneous framework idea is implemented using an Nvidia TX2 GPU and a Xilinx Artix-7 FPGA. Experimental results indicate that the proposed framework can achieve faster computation and much lower power consumption.

### Multi layer Structure



By:

17325A0506- S Harika

17325A0511- T Rachana



# STUDENT ACHIEVEMENTS

The Classical Team from BRECW won first prize at the Golden Jubilee Celebrations held at JNTUH.



Students from BRECW gave auditions at JNTUH

Golden Jubilee Celebrations of JNTUH



**Congratulations to BRECW Classical Dance Team the First Prize Winners**



***Academic Year: 2021-22***

***Volume 4***

**TECHNICAL  
MAGAZINE**



**Sparkles**



***Magazine Details:***

**Editors:**

**Chief Editor:** Ms K Usha Rani

**Faculty Editor:** Ms P Sumalatha

**Student Editors:**

Ms N Akshaya -19321A0508

Ms K Chinmai -19321A0524

Ms Y Sai Srujana -19321A0581