VIGNAN'S INSTITUTE OF MANAGEMENT AND TECHNOLOGY FOR WOMEN

INSIGHT

NEWS LETTER

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VOLUME NO:27

JAN - MAR, 2023

Vision of the Department

To inspire and educate female students in Computer Science and Engineering to become skilled, ethical, and innovative professionals prepared for future technologies and challenges.

Mission of the Department

M1: To provide strong foundational and advanced knowledge in core areas of Computer Science and Engineering, enabling students to design, analyse, and solve engineering problems using modern Computing tools.

M2: To promote research skills, innovation, entrepreneurship and lifelong learning by encouraging students to participate in research, development, and interdisciplinary activities in emerging technologies.

M3: To inculcate professional ethics, social responsibility, and sustainable practices, enabling graduates to contribute positively to society.

Program Educational Objectives

PEO1: To acquire logical and analytical skills in core areas of Computer Science & Information Technology.

PEO2: To adapt new technologies for the changing needs of IT industry through self-study, graduate work and professional development.

PEO3: To demonstrate professional and ethical attitude, soft skills, team spirit, leadership skills and execute assignments to the perfection.

Program Specific Outcomes

PSO1: **Software Development:** Ability to grasp the software development life cycle of software systems and possess competent skill and knowledge of software design process.

PSO2: **Industrial Skills Ability:** Ability to interpret fundamental concepts and methodology of computer systems so that students can understand the functionality of hardware and software aspects of computer systems.

PSO3: **Ethical and Social Responsibility:** Communicate effectively in both verbal and written form, will have knowledge of professional and ethical responsibilities and will show the understanding of impact of engineering solutions on the society and also will be aware of contemporary issues.

EDITORIAL BOARD

COMPUTER SCIENCE AND ENGINEERING

Established in 2008, the CSE Department at VMTW has grown from an intake of 90 to 240 students, reflecting its commitment to excellence. The department earned NBA accreditation in 2019 and reaccreditation in 2022, ensuring high academic standards.

With experienced and research-driven faculty, the department promotes innovation through Centres of Excellence in IoT and AI & ML and collaborations with MSME, ALEAP, and TASK. Active associations with ISTE, CSI, and IETE enrich student learning through workshops and seminars.

Boasting 90% placements in leading companies like Amazon, Flipkart, Accenture, and Cognizant, and a highest package of ₹ 20 LPA, the department stands as a hub of innovation, research, and success.

HOD'S MESSAGE

Dr. Phijik Battula,
Associate Professor &
HoD, DEPARTMENT OF
COMPUTER SCIENCE AND
ENGINEERING

Dr. Phijik Battula brings over 20 years of academic and research experience to his role as Associate Professor and Head of the Department of Computer Science & Engineering at Vignan's Institute of Management and Technology for Women (VMTW), Hyderabad. He earned his Ph.D. in Computer Science from Osmania University, Hyderabad in 2023. He holds an M.Tech. in Computer Science and Engineering from Jawaharlal Nehru Technological University Hyderabad (JNTUH). Dr. Battula's expertise spans Computer Networks, Software Engineering, Operating Systems, Machine Learning, and Blockchain Technologies. He has made significant scholarly contributions, including:3 national patents,1 authored book,10 journal publications, including(1 in SCIE-indexed journal,4 in SCOPUS-indexed journals,5 in UGC- approved journals,2 international conference papers).He also served as an Academic Counsellor with the Indira Gandhi National Open University (IGNOU), Regional Services Division, Maidan Garhi, New Delhi, through Aurora Degree College Study Center (Code: 0111), Hyderabad. A dedicated mentor and educator, Dr. Battula has guided over 100 B.Tech graduates from VIGNAN's Group Institutions, Hyderabad. He is an active member of several professional organizations, Life Member, Indian Society for Technical Education (ISTE) – LM-137313,Life Member, International Association of Engineers (IAENG) – Member No: 277087,Life Member, Society of Digital Information and Wireless Communication (SDIWC) – ID: 30616.

FACULTY ARTICLE ON NEURAL NETWORKS

By, **Masoom Basha,** Assistant Professor (CSE)

A Digital Renaissance: Reviving Art and Culture Through Technology

In today's era, technology has become the new canvas for creativity, giving rise to a Digital Renaissance where art, culture, and innovation beautifully converge. Modern artists use digital tools, AI, and design software to recreate classical styles while adding

futuristic flair. This blend of creativity and code allows art to evolve while honoring tradition.

Virtual and augmented reality have transformed how people experience art — letting audiences step into 3D exhibitions, interact with masterpieces, and connect emotionally with creations beyond museum walls. Similarly, in music, artists now fuse classical melodies with digital beats, creating fresh sounds that bridge generations.

FACULTY PUBLICATIONS

Sl No	Author	Title	ISSN No	Journal name
1	M.PARIMALA	A NOVEL MECHANISM OF RICE LEAF DISEASE CLASSIFICATION USING DEEP LEARNING ALGORITHMS	0970-2555	Industrial Engineering Journal

BOOKS & CHAPTERS PUBLISHED:

S.NO.	AUTHOR	TITLE OF THE BOOK	ISSN NUMBER
1.	B Geetha	Introduction to cloud computing infrastructure and its applications	978-93-93769-27-5

FACULTY ACHIEVEMENTS

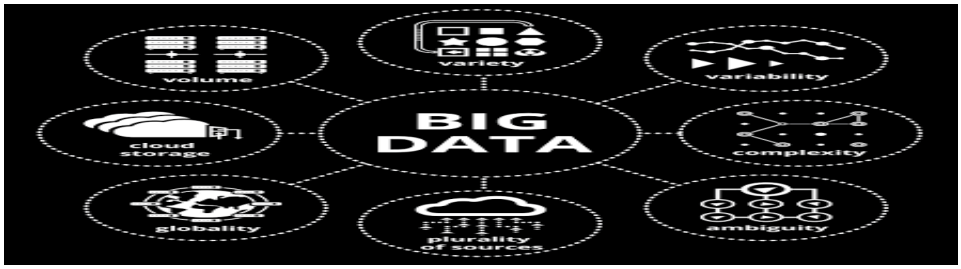
S.NO.	NAME OF THE FACULTY	EVENT TYPE	DATE OF EVENT	MODE OF ATTENDING	PLACE
1.	Mr. Ravi Kumar	FDP-Data science using Machine Learniung	02.01.2023 to 06.01.2023	Online	EXCEL R

STUDENT ARTICLE ON BIG DATA – THE POWER OF INFORMATION

By,G S Yamini Devi III year (CSE)

Big Data – The Power of Information

In today's digital era, data is being generated at an unprecedented rate from social media, sensors, mobile devices, and online transactions. This massive and complex collection of information is known as Big Data. It is characterized by the five V's — Volume, Velocity, Variety, Veracity, and Value — which define the scale, speed, and diversity of data generated every second.



Big Data technologies such as Hadoop, Spark, and NoSQL databases help in storing, processing, and analyzing vast datasets efficiently. Organizations use Big Data analytics to uncover hidden patterns, predict trends, and make informed decisions in fields like healthcare, finance, e-commerce, and cybersecurity.

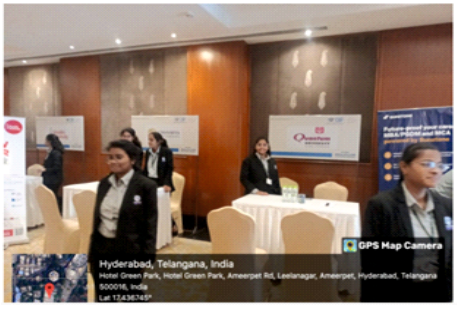
As the world becomes increasingly data-driven, learning to handle and interpret Big Data has become a key skill for future technologists. It empowers innovation, improves business intelligence, and drives smarter solutions for global challenges.

STUDENTS ATTEMPTED COMPETITIVE EXAMS:

Sl No	Roll No	Name	Exam Reg No	Name of the Exam
1	20UP1A0511	RUCHITHA DAYALA	1993363	GRE
2	20UP1A0563	PAVANI KRISHNA PRIYA CHAVA	547368	IELTS

Events at Department:

The Department of Computer Science and Engineering, in association with the Career Advancement Program (CAP) Cell, organized an Education Fair at VMTW. The event aimed to guide students on higher education and career opportunities in India and abroad.



Representatives from various universities and institutes interacted with students, providing insights into courses, scholarships, and emerging technology domains. The fair proved to be an enriching platform, helping students plan their future academic and professional paths with clarity and confidence.

CAMPUS RECRUITMENT

S.NO.	COMPANY'S NAME	OFFERS	PACKAGE	ROLE
1.	Trimindtech	2	7 LPA	Trainee software engineer
2.	Accenture	10	4.5 LPA	Associate software engineer
3.	DXC	16	4.2 LPA	Associate professional
4.	Unschool	6	6.5 LPA	Business operation executive
5.	Jones Lang Lasalle	1	10 LPA	Software developer

STUDENT PROJECTS

Deep fake detection using Deep Learning:

B. Shivani (20UP1A0506)

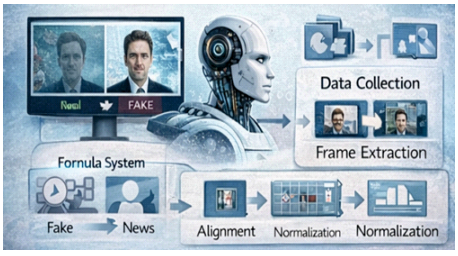
Deep fakes are synthetically generated or manipulated audio and video content created using advanced deep learning techniques, particularly Generative Adversarial Networks (GANs). While deep fakes have legitimate applications in entertainment and media, they pose serious threats when misused for misinformation, identity theft, political manipulation, and cybercrime. Detecting deep fakes has therefore become a critical research area. This project focuses on detecting deep fake content using deep learning models that can identify subtle visual and temporal inconsistencies invisible to the human eye.

Existing System

Traditional multimedia forensics techniques relied on manual inspection or handcrafted features such as pixel-level inconsistencies, lighting errors, and compression artifacts. Some early automated systems used shallow machine learning algorithms with manually extracted features. However, these methods were ineffective against high-quality deep fakes, lacked generalization, and failed when confronted with new manipulation techniques. Their accuracy was limited, especially for real-time and

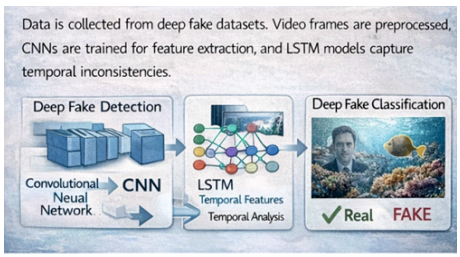
Proposed System

The proposed system employs deep learning-based detection models to automatically identify deep fake images and videos. Convolutional Neural Networks (CNNs) are used to extract spatial features from video frames, while advanced architectures such as LSTM or Transformers analyze temporal inconsistencies across frames. The system is trained on large datasets containing both real and fake media, enabling it to learn distinguishing patterns. This approach provides higher accuracy, robustness, and scalability in detecting sophisticated deep fake content.



Methodologies Used

The methodology begins with data collection from publicly available deep fake datasets. Video frames are extracted and preprocessed through face detection, alignment, and normalization. Deep learning models such as CNNs (e.g., ResNet, Xception) are trained for feature extraction and classification. For video-based detection, temporal models like LSTM are used to capture motion inconsistencies. Training is performed using supervised learning with loss optimization techniques such as cross-entropy. The system's performance is evaluated using metrics like accuracy, precision, recall, and F1-score.



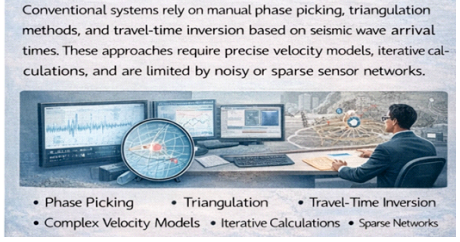
Machine learning for fast & reliable source location estimation in earthquake early warning:

Edukulla Sriya (20UP1A0516)

Earthquake Early Warning (EEW) systems aim to detect earthquakes immediately after their initiation and provide advance warnings before strong ground shaking reaches populated areas. A critical component of EEW systems is accurate and rapid estimation of the earthquake source location, which directly impacts warning reliability and response time. Traditional seismic analysis methods can be computationally intensive and slow when dealing with large sensor networks. Machine Learning (ML) offers a powerful alternative by learning complex patterns from seismic data and enabling fast, automated, and reliable source

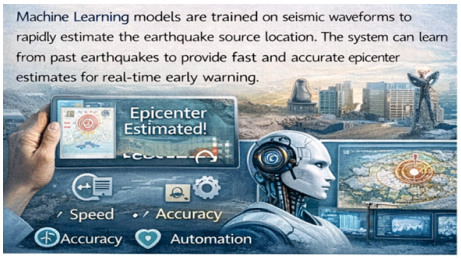
Existing System

Conventional earthquake source location methods rely on physics-based models such as travel-time inversion and triangulation using seismic wave arrival times. These approaches require accurate phase picking, detailed velocity models, and iterative computations, which can introduce delays and errors. Performance often degrades in noisy environments or sparse sensor networks, limiting their effectiveness for real-time early warning applications.



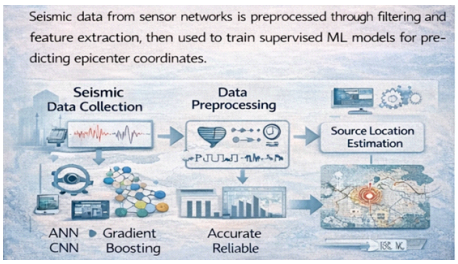
Proposed System

The proposed system applies machine learning models to estimate earthquake source location directly from seismic waveform data. ML models are trained on historical and simulated earthquake data to learn the relationship between recorded seismic signals and their corresponding source locations. This approach reduces dependence on precise phase picking and complex velocity models. As a result, the system provides faster predictions, improved robustness to noise, and enhanced reliability for real-time EEW systems.



Methodologies Used

The methodology begins with collecting seismic waveform data from distributed sensor networks. Data preprocessing includes filtering, normalization, and feature extraction such as amplitude, frequency content, and arrival patterns. Supervised machine learning models—such as Artificial Neural Networks (ANNs), Convolutional Neural Networks (CNNs), or Gradient Boosting methods—are trained to predict earthquake epicenter coordinates. Model performance is evaluated using metrics like localization error and prediction latency. Once trained, the model is integrated into an EEW framework for real-time source location estimation.



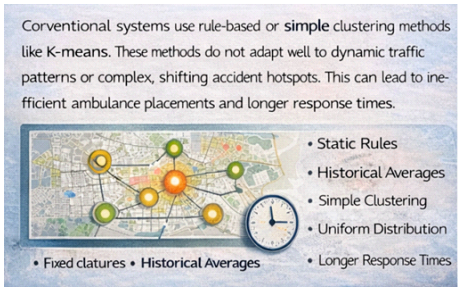
Optimal ambulance positioning for road accidents with deep embedded clustering:

Rallapally Sahithi (20UP1A0543)

Rapid emergency response is critical in reducing fatalities and injuries caused by road accidents. One of the major challenges in emergency medical services (EMS) is the optimal positioning of ambulances to ensure minimum response time to accident-prone locations. Traditional placement strategies often fail to adapt to dynamic traffic patterns and accident distributions. This project proposes the use of Deep Embedded Clustering (DEC), a deep learning–based approach that identifies hidden patterns in accident data to determine optimal ambulance locations, thereby improving response efficiency and saving lives.

Existing System

Conventional ambulance positioning systems rely on static rules, historical averages, or simple clustering techniques such as K-means. These methods often assume uniform demand and do not consider complex spatial–temporal accident patterns. Rule-based and heuristic approaches lack adaptability to changing traffic conditions, peak accident hours, and urban growth. As a result, ambulances may be poorly distributed, leading to delayed response times during emergencies.

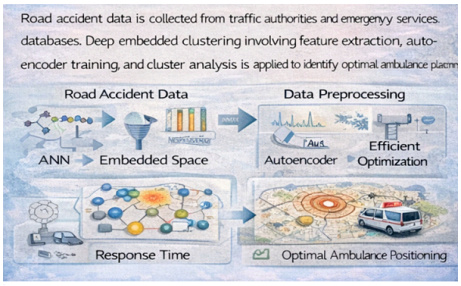


Proposed System

The proposed system applies Deep Embedded Clustering, which combines deep neural networks with clustering techniques to learn meaningful representations of accident data. Accident locations, time, severity, and traffic conditions are embedded into a low-dimensional feature space, where high-risk accident zones are automatically identified. Based on these clusters, ambulances are optimally positioned near accident hotspots. This data-driven approach dynamically adapts to changing patterns, ensuring faster response and better resource utilization.

Methodologies Used

The methodology begins with collecting road accident data from traffic authorities and emergency services databases. Data preprocessing includes noise removal, normalization, and feature extraction such as location coordinates, time of accident, and severity. An autoencoder-based deep neural network is trained to learn latent representations of the data. Deep Embedded Clustering is then applied to group accident-prone regions. Optimization algorithms are used to determine ambulance placement based on cluster density and risk levels. System performance is evaluated using response time reduction and coverage efficiency metrics.



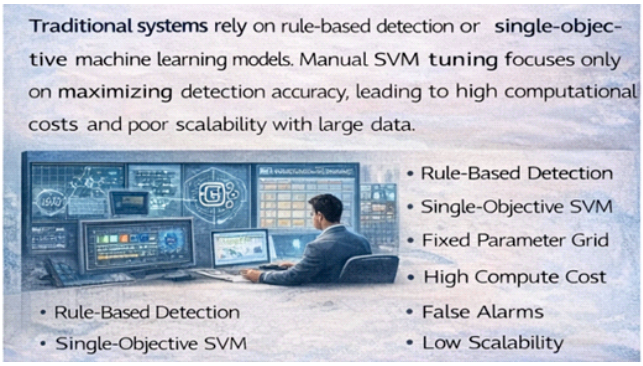
A Bi-objective hyper heuristic support vector machine for big data cyber security:

M Pragathi (20UP1A0580)

With the rapid growth of digital systems and online services, cyber security threats have become increasingly complex and frequent. Organizations generate massive volumes of network and security-related data, making traditional threat detection methods inadequate. Machine learning techniques, particularly Support Vector Machines (SVM), have shown strong performance in intrusion detection and malware classification. However, tuning SVM parameters for large-scale data while balancing detection accuracy and computational efficiency remains challenging. This project proposes a bi-objective hyper-heuristic SVM framework to enhance cyber security analysis in big data environments.

Existing System

Existing cyber security systems commonly use rule-based detection or single-objective machine learning models. Traditional SVM-based systems rely on manual or fixed parameter tuning and focus primarily on maximizing detection accuracy. These approaches often ignore other critical objectives such as processing time and scalability. As data volume increases, such systems face issues like high computational cost, poor adaptability to new attacks, and increased false alarm rates.



Proposed System

The proposed system introduces a bi-objective hyper-heuristic approach integrated with SVM for cyber security applications. The hyper-heuristic framework automatically selects and optimizes low-level heuristics for SVM parameter tuning. Two objectives—maximizing attack detection accuracy and minimizing computational complexity—are optimized simultaneously. This results in a robust and scalable intrusion detection system capable of handling large-scale cyber security data efficiently.

Methodologies Used

The methodology begins with collecting big data cyber security datasets such as network traffic logs and intrusion records. Data preprocessing includes noise removal, normalization, and feature selection. A Support Vector Machine is used as the base classifier. The hyper-heuristic layer controls multiple optimization heuristics to tune SVM parameters. A bi-objective optimization strategy evaluates solutions based on accuracy and execution time. Performance is assessed using metrics such as detection rate, false positive rate, and computational efficiency.

Program Outcomes (Adapted from NBA)

Engineering Graduates will be able to:

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

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.

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 safety, and the cultural, societal, and environmental considerations.

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

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.

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.

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.

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

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.

Project Management and Finance: Demonstrate knowledge and understanding of the engineering 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.

Life-Long Learning: Recognize the need for and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.