



CSE Times

NEWSLETTER OF DEPARTMENT CSE



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INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(Formerly known as Babu Banarasi Das National Institute of Technology and Management)

DEPARTMENT OF C.S.E

- The department offers **B.Tech (CSE)** with an intake of **240 students**, affiliated with **Dr. A.P.J. Abdul Kalam Technical University, Lucknow**, and is known for its excellence in education and research.
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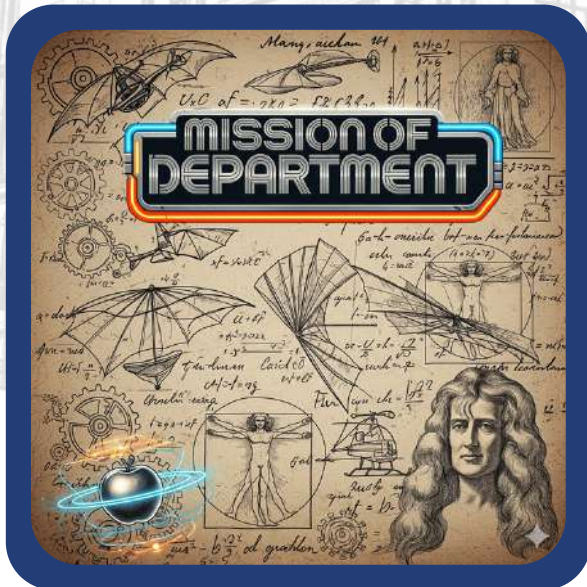
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VISION OF DEPARTMENT

"To produce globally competent professionals having social values and commitment to serve the global needs with the ability to work in an interdisciplinary environment."



MISSION OF DEPARTMENT



- To impart quality education to the students to enhance their ethical, professional and leadership qualities to make them globally competitive.
- To create a conducive environment in which students can explore computational problems and analyze them to identify the optimal solutions.
- To strive for continual enhancement of technical knowledge & innovation through industry interface to accomplish global needs

VISION OF INSTITUTE

"To become a leading institute of providing professionally competent and socially responsive technocrats with high moral values."



To become a leading institute of providing professionally competent and socially responsive technocrats with high moral values."

MISSION OF INSTITUTE



- To create an eco-system for the dissemination of technical knowledge, to achieve academic excellence.
- To develop technocrats with creative skills and leadership qualities, to solve local and global challenges.
- To impart human values and ethics in students, to make them socially and ecofriendly responsible.

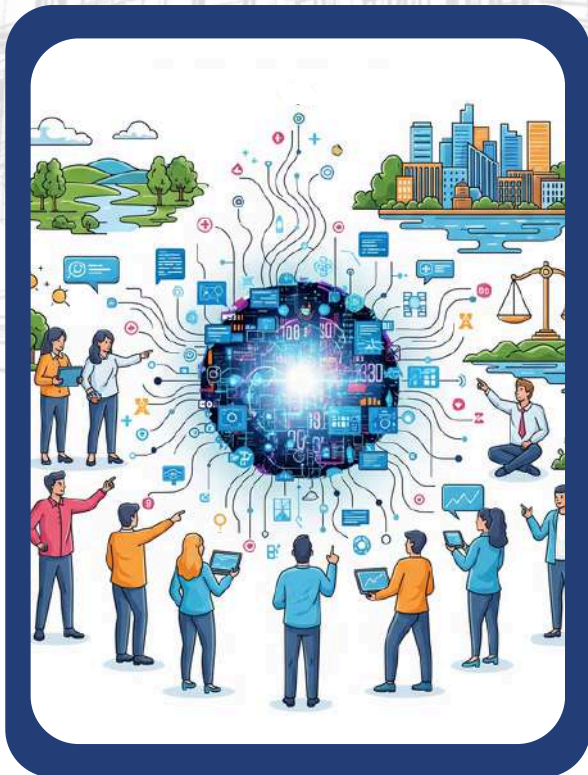
PROGRAM SPECIFIC OUTCOMES (PSOs)

- Able to design and implement the data structures and algorithms to deliver quality software products.
- Able to apply Artificial Intelligence and Machine Learning to solve society - related needs.



PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

- **PEO-1: Problem-Solving and Analytical Thinking:** To apply computing principles to analyze complex problems, design effective solutions, and implement them to meet global standards.
- **PEO-2: Global Competitiveness and Technology Advancement:** To develop cutting-edge technology-driven projects that address global needs, foster a culture of continual enhancement and drive innovative solutions.
- **PEO-3: Sustainable Leadership and Responsible Innovation:** To demonstrate effective leadership, collaboration, and a deep understanding of the societal implications of technology, leading to responsible and sustainable outcomes.



RESEARCHES BY FACULTY

Original



AI Ethics: Bridging Innovation with Morality

Saroj Singh¹, Priyanka Gupta², Amit Kumar Sachan³, and Sonam Singh⁴^{1,2} Assistant Professor, Department of Computer Science & Engineering, Babu Banarasi Das Engineering College, Lucknow³ Assistant Professor, Department of Computer Science & Engineering, Babu Banarasi Das Institute of Technology and Management, Lucknow⁴ Assistant Professor, Department of Computer Science & Engineering, Babu Banarasi Das University, Lucknow

Abstract: With advancements in face recognition, self-driving cars, and medical diagnostics, artificial intelligence (AI) is having an increasing impact on people and society. AI has the amazing potential to significantly improve human wellbeing and advance both socially and economically. However, because of obstacles such as limited visibility, data biases, data security, and some privacy concerns, AI also presents significant risks. To reduce hazards, users and developers need to be aware of these drawbacks and take appropriate action. To anticipate and lessen negative effects, it is essential to identify possible areas of danger across the AI life cycle. Even though "machine ethics" research started in 2006, AI ethics is still a relatively new area of study within ethics more broadly. Establishing appropriate ethical principles, norms, standards, rules, and regulations requires an understanding of AI ethics and how to develop ethical AI. AI that is ethical acts and behaves in a morally upright way.

There are many different perspectives on AI, and in order to properly identify AI, developers, scholars, business leaders, legislators, and the general public must all contribute. This paper examines ethical difficulties and prejudices in AI, emphasizing injustice and bias as pressing problems from a sociotechnical standpoint. Uncertain standards and a lack of ethical expertise are the primary barriers in AI ethics.

Keywords: AI ethics, Bias, Data Security, Sociology, Robo ethics.

1. INTRODUCTION

AI is not a new field; rather, it is just coming out of one of its many "winters" and is starting a new "spring" [1,2]. AI's development is transforming society in ways that were unthinkable just a few years ago. Even though AI has been around for a while, its pervasiveness in our daily lives is frequently invisible. Whether it's for reading emails, conducting Google searches, recommending movies and music, or even providing driving directions, artificial intelligence has become a vital part of our lives. The COVID-19 epidemic has increased demand for AI's help and highlighted our reliance on it. AI is becoming more and more common in a number of sectors, including communications, education, healthcare, transportation, and agriculture. It is necessary to regularly interact with AI-powered applications in order to survive in the current world. [3, 4].

A viewpoint on the early machine age was offered by considering technology as a tool. However, advancements driven by AI are altering how people interact and exist in the current second age of machines. Governments, corporations, and other organisations frequently utilise AI-based algorithms to make decisions that have a big influence on people and society. Everyone, everywhere, and at any time could be impacted by their choices. They might provide answers to issues that come up in a range of occupations or in daily life, but they might also carry risks, including being turned down for a job or medical care. The discriminatory effect that AI-based decision-making has on some demographic groups has been shown by prior incidents. The company's ad engine, which has been shown to show far fewer high-paying job ads for women than for males, is one instance of gender bias in Google's targeted advertising [5]. These incidents have increased public anxiety about the potential effects of AI on our day-to-day lives.

Since it is normal for most people to be ignorant of the experiences of other groups, prejudice is not a new occurrence. Instead, it dates back to the earliest days of human civilisation [6]. However, AI-based decision-making has the potential to establish completely new categories, norms, and biases of a completely different kind, which could reinforce pre-existing biases. These ever-growing worries have prompted a reassessment of AI-based systems in favour of new approaches that also consider how equitable their judgements are.

Many academics and industry professionals believe that since AI is still far from being on par with humans, there is no urgent need to think about ethical issues. However, when paired with other intelligent technologies like robotics, AI has already shown promise in a variety of industries, including business, healthcare, and transportation. Applications such as autonomous cars bring up significant ethical issues, and AI is already having an impact on civilisation and society. Autonomous vehicles, for example, have the potential to eliminate a wide range of jobs, which would significantly impact related businesses like transportation. For instance, allowing

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895

The paper entitled "AI Ethics: Bridging Innovation with Morality" by Saroj Singh, Priyanka Gupta, Amit Kumar Sachan, and Sonam Singh was published in "INTERNATIONAL CONFERENCE ON ADVANCES IN EMERGING TRENDS IN COMPUTER APPLICATIONS (ICAETC-2025)".

ISSN No.: 3, Volume: Vol.54, Page No.: 895-904

Duration: January 2025 to June 2025

Conference/Journal Name: Cuestiones De Fisioterapia, Scopus



EduDevOps : The Ultimate CI/CD Corporate Devops Pipeline Project

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Abstract -The accelerated pace of digital transformation has heightened the requirement for efficient, scalable, and reliable software delivery practices. Legacy software development and deployment pipelines are typically inefficient owing to manual interventions, siloed teams, and constraints in scalability. This research presents a comprehensive DevOps Capstone Project that takes aim at conceptualizing and executing an enterprise-scale Continuous Integration and Continuous Deployment (CI/CD) pipeline. By utilizing Docker, Kubernetes, Terraform, and other automated tools, the project addresses significant software delivery concerns such as speed, quality, and operational efficiency. The findings demonstrate how a consolidated DevOps pipeline can enable agile development, reduce time-to-market, and improve overall software quality, thereby positioning organizations for long-term digital success.

Key Words: DevOps, CI/CD Pipeline, Automation, Containerization, Infrastructure as Code

1. INTRODUCTION

As companies utilize increasingly digital solutions to remain competitive, there has never been more of a need for faster and more stable software delivery. With so much speed in the environment, creating, testing, and deploying software quickly enough is the primary difference between marketplace success and failure. Yet, conventional software deployment cannot always accommodate these needs because it is afflicted with many inherent disadvantages. Manual intervention at various stages, poor coordination between dev and operations teams, and lack of scalability become key concerns in such an approach. These issues are inclined to postpone release schedules or further jeopardizing the

system in rendering suboptimal performance while reducing the end-user satisfaction and making business results worse. There arises DevOps as a facilitator of cultural change and technical paradigm to overcome all these challenges with automated, collaborative, and continuous improvement. The core of DevOps is the Continuous Integration and Continuous Deployment pipeline, which is the foundation that automates code integration, testing, deployment, and monitoring processes. Through removing the human bottlenecks, CI/CD pipelines enable seamless software updates, which enables organizations to take their products to market speedily and securely with less risk. This paradigm increases the rate of development without compromising on the quality and stability of software by having an agile and resilient model of software delivery. Ultimate CI/CD Corporate DevOps Pipeline is a corporate-level pipeline with strong, scalable, and secure features that is built in accordance with the requirements of the corporate world. The pipeline takes care of recurring processes and maintains real-time feedback to provide enhanced quality in the release of software. The central parts of the project are containerization using Docker, orchestration using Kubernetes, and infrastructure management using Terraform. Together, these technologies create an extremely flexible and scalable solution with excellent operational efficiency. Further, the pipeline is created to easily integrate with well-known version control systems and Agile project management software, so the process is easy and team-friendly from coding to production deployment. This project specifically targets some of the most critical problems faced during software deployment, such as slow feedback loops, inefficiency in resources, and high error potential due to manual interventions. The project converts conventional software delivery into a lean, flexible, and future-proof pipeline through the application of DevOps principles and advanced automation technologies. This

The paper entitled **"EduDevOps: The Ultimate CI/CD Corporate DevOps Pipeline Project"** by Deepak Pant Published in **"INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH IN ENGINEERING AND MANAGEMENT (IJSREM)"**.

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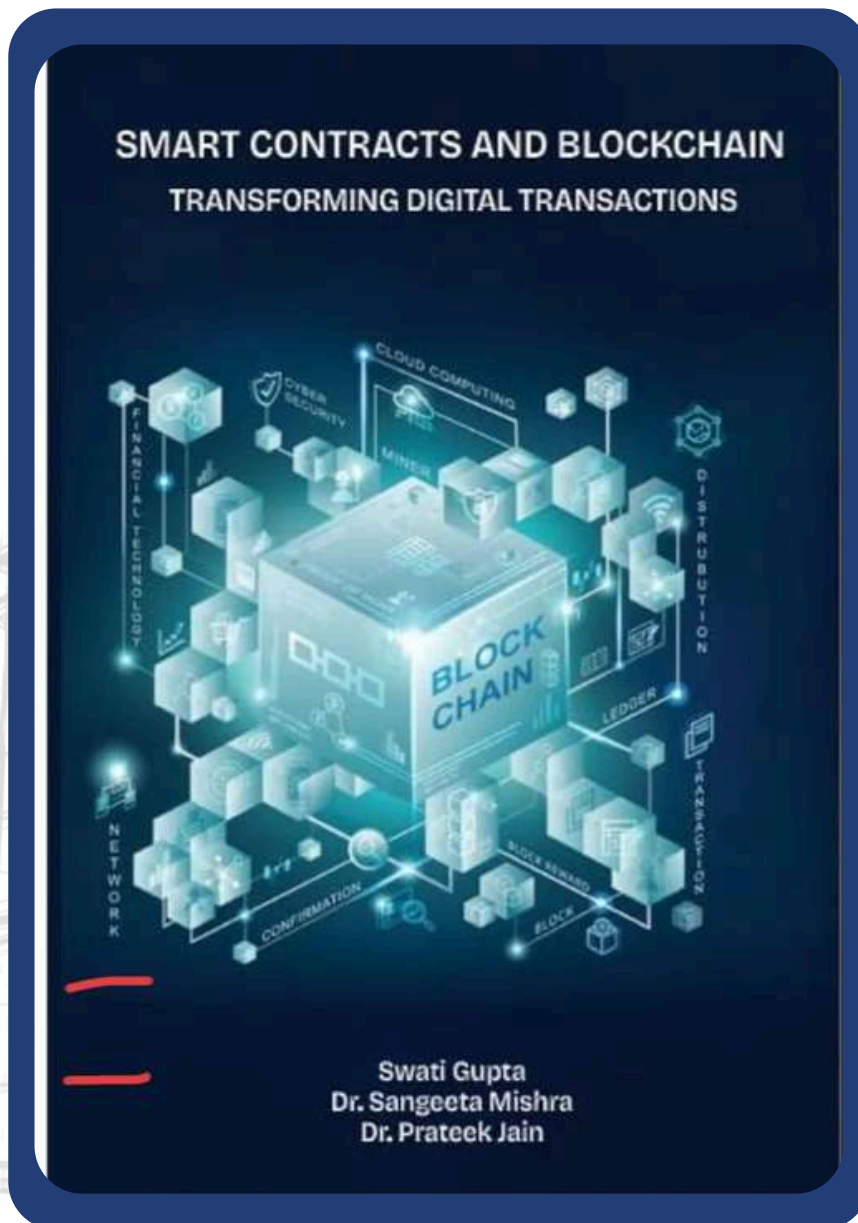
Duration: January 2025 to June 2025

Conference/Journal Name: INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH IN ENGINEERING AND MANAGEMENT (IJSREM)

BOOK PUBLISHED BY FACULTY



Dr. Sangeeta Mishra published the book
"Artificial Intelligence and its Influence on Modern Art"
(ebook ISBN No.: 978-93-7002-429-8)



Dr. Sangeeta Mishra authored a book chapter titled
"Transforming Digital Transactions"
in the book **"Smart Contracts and Blockchain"**.
(ISBN No.: 978-93-6294-823-0)

4/19/25, 10:19 AM Intellectual Property India


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 PATENTS DESIGNS TRADE MARKS
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Application Details	
APPLICATION NUMBER	202511027359
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	24/03/2025
APPLICANT NAME	1 . Prof. (Dr.) SYED HAIDER ALI 2 . APARNA SINGH 3 . Dr. SANGEETA MISHRA 4 . Dr INA KAPOOR 5 . RAMAKANT KATTIYAR
TITLE OF INVENTION	AI-POWERED PERSONALIZED LEARNING PLATFORM
FIELD OF INVENTION	COMPUTER SCIENCE
E-MAIL (As Per Record)	silverliningipr@gmail.com
ADDITIONAL-EMAIL (As Per Record)	
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	04/04/2025

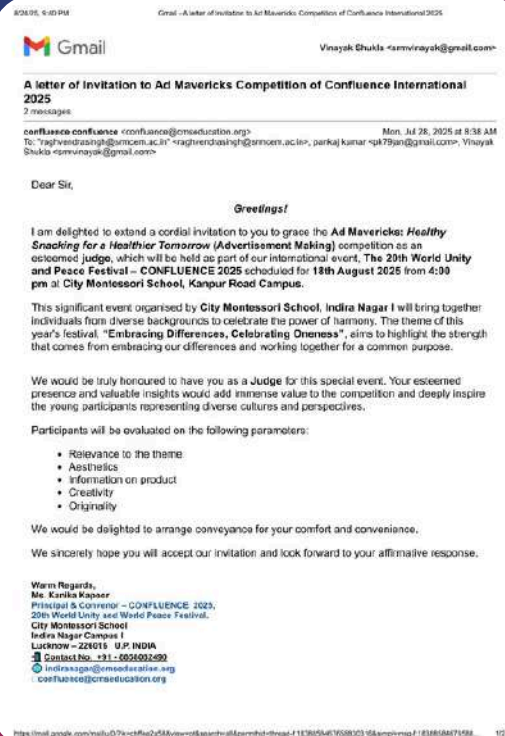
Application Status	

<https://ipsearch.ipindia.gov.in/PatentSearch/PatentSearch/ViewApplicationStatus>
1/2

Dr. Sangeeta Mishra has been granted a patent on
"AI-POWERED PERSONALIZED LEARNING PLATFORM".

ACHIEVEMENTS OF FACULTY

LETTER OF INVITATION



Dr. Sangeeta Mishra was invited as an esteemed judge to grace the
"Ad Mavericks: Healthy Snacking For a Healthier Tomorrow"
(Advertisement Making) competition
 on **18th August, 2025** at

"The 20th World Unity and Peace Festival: CONFLUENCE 2025" at City
 Montessori School, Kanpur Road Campus.

FACULTY DEVELOPMENT PROGRAMS

Dr. Sangeeta Mishra attended the FDP "The Digital Pulse: Exploring the core of Emerging Technologies" from July 14th–July 18th, 2025 organized by Department of Computer Science & Information Systems at Shri Ramswaroop Memorial University, Barabanki, Uttar Pradesh.



Dr. Sangeeta Mishra attended the FDP "Mastering Cloud Computing Essentials with AWS" from March 3rd–March 7th, 2025 conducted by Computer Science and Engineering Department at Integral University, Lucknow, Uttar Pradesh.

Dr. Sangeeta Mishra attended the five-day online FDP "Artificial Intelligence for Sustainable Development and Quality Education: Interdisciplinary Insights from Science, Society and Technology" held virtually during July 21st–July 25th, 2025 organised by Amity School of Engineering and Technology and Amity Institute of Information Technology of Amity University, Chattisgarh, Raipur.



Mr. Deepak Pant completed the FDP on "Data Science(ML & AI)" from Jan 27th– Feb 1st, 2025 organised by E & ICT Academy, IIT Kanpur.

Mr. Deepak Pant completed the FDP on "**Data Analytics using AI**" from **Feb 3rd- Feb 8th, 2025** organised by **E & ICT Academy, IIT Kanpur**.



Ms. Priyanka Gupta attended the one week FDP on "**Data Visualization with Power BI**" from **Jan 7th-Jan 11th, 2025** organized by **Electronics & Communication Engineering and Electrical Engineering at Babu Banarasi Das Northern India Institute of Technology, Lucknow** in association with "**Learn and Build**".

Dr. Sangeeta Mishra attended the 5-day FDP "**Building Web Development Solutions with Cloud Computing**" under the **Next Gen Employability Program** from Jan 27th-Jan 31st, 2025.



PUBLICATIONS OF STUDENTS



International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 09 Issue: 05 | May - 2025 SJIF Rating: 8.566 ISSN: 2582-3930

A Machine Learning-Based Deanonimization Tool for Analyzing Anonymized Network Traffic

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Khushi Srivastava^{*4}, Shivaditya Singh^{*5}

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Abstract

Deanonimization tools are designed to unmask hidden identities or reconstruct obscured information, often leveraging advanced data analysis techniques. These tools have applications across cybersecurity, digital forensics, and law enforcement. The goal of this study is to develop a deanonimization tool that leverages metadata analysis, pattern recognition, and machine learning algorithms to identify and correlate digital footprints left across diverse platforms. This tool targets scenarios involving anonymized communication, obfuscated data logs, and masked web interactions, aiming to reveal underlying identities without compromising ethical boundaries. This project explores the concept of deanonimization, a technique used to reveal the true identity of individuals or entities previously anonymized in data systems. In a college context, this topic is relevant due to the growing use of online systems for academic assessments, student interactions, and personal data storage. The project investigates the methods, tools, and challenges associated with deanonimization, particularly in relation to how data, once anonymized, can potentially be traced back to its source through advanced algorithms, metadata analysis, or pattern recognition. Our proposed tool employs multi-layered analysis, starting with metadata extraction from network packets, social media footprints, or anonymized datasets. By

correlating temporal, spatial, and contextual parameters, the system constructs potential user profiles. Next, machine learning models analyze behavioral patterns, leveraging clustering and classification algorithms to match anonymized entities with known datasets. The system also integrates Natural Language Processing (NLP) techniques for deanonimizing text-based communications, extracting linguistic traits that can link anonymous entities to real-world users. Ethical considerations and regulatory compliance are central to this project, ensuring the tool is used responsibly. Stringent safeguards are incorporated to prevent misuse, and its deployment is intended for authorized personnel in scenarios such as criminal investigations, fraud detection, and cyber threat mitigation. This deanonimization tool represents a significant step in advancing cybersecurity capabilities while emphasizing the balance between security needs and ethical considerations in the digital age.

1. Introduction

Cybersecurity in the dark web domain focuses on safeguarding users and systems operating in this concealed network. The dark web thrives on anonymity, offering privacy to users ranging from whistleblowers to cybercriminals. However, de-anonymity—the process of exposing hidden identities—poses a critical challenge. By exploiting vulnerabilities in networks, analyzing behavior, or correlating traffic, entities can trace users' real-world identities. This dual-edged capability aids law enforcement in combating illegal activities but raises ethical concerns for legitimate privacy-focused users. Understanding de-anonymity is pivotal for balancing security and privacy in the ever-evolving dark web landscape.

The TOR (The Onion Router) network was designed to provide anonymity and privacy for users by routing traffic through a series of encrypted relays. This network is widely used for accessing "onion sites," which exist exclusively within the TOR ecosystem and are inaccessible via traditional search engines. These sites often serve as platforms for privacy-focused communications and activities. However, the promise of complete anonymity within TOR is not absolute. With advancements in technology and the evolving capabilities of adversaries, the de-anonymization of entities—whether individuals, organizations, or services—has become a critical topic in cybersecurity. De-

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AI Powered City Safety

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ABSTRACT

The AI-Powered City Safety project leverages advanced technologies like Artificial Intelligence (AI), Machine Learning (ML), and Internet of Things (IoT) to address critical urban safety challenges. With rapid urbanization and increased population density, the project aims to develop predictive, preventive, and risk-reduction solutions for hazards such as fires and road accidents. By integrating state-of-the-art object detection models like YOLOv5 and YOLOv8 with OpenCV for real-time video analysis, the system achieves high accuracy in detecting and responding to potential threats. Key intervention areas include early fire detection, where YOLOv8 and OpenCV's preprocessing techniques ensure rapid identification of fire and smoke, and dynamic road accident prevention, where YOLOv5 and OpenCV track vehicle and pedestrian interactions to predict collisions. A user-friendly interface enables real-time alerts, incident visualization, and system control for emergency responders and urban authorities.

The proposed methodology focuses on scalable and adaptable system development, including environment setup, data preprocessing, model training, deployment, and continuous improvement through feedback and re-training. Results demonstrate high precision, recall, and low latency, validating the system's efficacy in urban safety management. This project provides a replicable framework for smart cities worldwide, contributing to safer, more sustainable urban environments.

I. INTRODUCTION

The AI-POWERED CITY SAFETY concept is an advanced approach that aims to improve the safety and resilience of towns and cities through the use of Artificial Intelligence (AI) and Machine Learning (ML). Safety in urban spaces is one of the major concerns and challenges of the present age due to the alarming versions of risk and danger that accompanies rapid urbanization and increased population concentrations. This project aims at offering universal solutions to these problems that are going to require the application of high technology in an effort to ensure that urban spaces become secure, sustainable, and habitable for all inhabitants. The project would develop and apply predictive, preventive, and risk-reduction models for any possible hazard in urban areas, using a number of AI and ML technologies backed by the powerful OpenCV, which is a free library for computer vision. With OpenCV, one will have all the tools available for image and video analysis, real-time object detection, motion tracking, and activity recognition. That is exactly what this project requires to make preprocessing and analysing the large quantities of visual data effective.

Fire Detection: Installation of early fire detection systems that employ the latest machine vision technologies, such as YOLOv8, in combination with OpenCV's preprocessing techniques to quickly evaluate fire risks. OpenCV supports critical operations such as contour detection, edge detection, and noise filtering to ensure accurate detection even in

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[1]

Saksham Gupta, Shiv Prakash Singh, Jyoti Singh, Ravi Yadav:
Research based on "AI powered City Safety", published in International Research Journal of Modernization in Engineering, Technology and Science (IRJMETS), ISSN No.: 2582-5208, Volume: 07, Issue: 05 May, 2025.

Estimating Redshift from Galaxy Color Indices: Ridge Regression to Deep Neural Networks

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Abstract:

This paper explores the use of machine learning models for estimating galaxy redshift from photometric color features derived from Sloan Digital Sky Survey (SDSS) data. We implemented and compared three models: a simple Ridge Regression, a shallow neural network using basic color indices, and a deeper neural network with an expanded set of color combinations. While the Ridge model captured some linear trends, both neural networks performed noticeably better, with the deeper model achieving slightly higher accuracy. Although the models are relatively simple and trained on basic color inputs, the results suggest that redshift prediction using photometric data is feasible without complex preprocessing or massive datasets.

Keywords — redshift estimation, galaxy colors, SDSS, ridge regression, neural network, photometric features, machine learning, regression models.

1. INTRODUCTION

In cosmology, redshift is an important value that helps us understand how far away galaxies are and how the universe is expanding. Usually, redshift is measured using spectroscopy, which gives accurate results but takes a lot of time and effort. Since large sky surveys like the Sloan Digital Sky Survey (SDSS) collect huge amounts of photometric data (like galaxy brightness in different filters), it makes sense to explore whether we can predict redshift using just that.

We started with a basic question: Can we use simple color differences between SDSS magnitudes to estimate redshift using machine

learning? This led us to try out a few models, starting from a standard Ridge Regression, moving on to a basic neural network, and finally building a deeper network with more color features. The goal wasn't to create a state-of-the-art system, but to see how much we could get out of these models using just the available color data.

This paper documents that process and compares how each of the three models performed on the task. The work is meant to be a straightforward exploration using standard tools, with an emphasis on simplicity and quick experimentation.

In astronomy, redshift is a key concept used to determine how far away a galaxy or celestial object is, and how fast it is moving away from us. The

Dhruv Saxena, Syed Gufran Hussain, Kunal Singh, Chitransh Anand Srivastava:
Machine Learning Model on “Estimating Redshift from Galaxy Color Indices: Ridge
Regression to Deep Neural Networks”, published in International Journal of
Scientific Research and Engineering Development(IJSRED), ISSN No.: 2581-7175,
Volume: 08, Issue: 03 May, 2025.

RESEARCH ARTICLE

OPEN ACCESS

Regularization-Driven Generalization in Few-Shot Learning: PAC-Bayes Bound as an Explanatory Tool

Dhruv Saxena

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Abstract:

In this paper, I explore how regularization techniques like dropout and weight decay impact generalization in few-shot learning tasks. To study this, I designed and ran experiments across multiple regression-based few-shot tasks, measuring the generalization gap — the difference between training and test loss. Alongside the empirical results, I computed PAC-Bayesian bounds to gain a theoretical understanding of generalization behavior. The results show that models with regularization not only generalize better but also produce tighter PAC-Bayes bounds, indicating stronger theoretical guarantees. I also conducted an ablation study by removing regularization, which led to higher generalization gaps and looser bounds. This research shows how combining empirical experiments with PAC-Bayesian theory can provide meaningful insights into why certain models generalize better, especially in few-shot learning scenarios.

Keywords — Few-Shot Learning, Generalization Gap, PAC-Bayesian Theory, Regularization, Dropout, Weight Decay, Meta-Learning, KL Divergence, Empirical Risk, Theoretical Bound

I. INTRODUCTION

Generalization — the ability of a model to perform well on unseen data — is one of the most important goals in machine learning. This becomes even more challenging in few-shot learning, where models must learn from very limited training data. In such settings, overfitting becomes a common issue, and understanding the factors that help models generalize is crucial. While deep learning methods can adapt to complex patterns, their generalization abilities often rely on strategies like regularization and proper initialization.

In this research, I aim to explore the connection between regularization techniques and generalization performance in the context of few-shot learning. Specifically, I study how applying dropout and weight decay affects both the empirical generalization gap and the PAC-

Bayesian generalization bound, a theoretical measure grounded in probability theory. The PAC-Bayes framework offers a principled way to connect training loss, model complexity (measured via KL divergence), and confidence about generalization. This makes it a valuable tool for analyzing not just how well a model performs, but why it performs that way.

To conduct this study, I use a simple meta-learning setup where models are trained on synthetic few-shot regression tasks. I compare models trained with and without regularization, track their training and test losses, and compute the generalization gap. Alongside this, I calculate the PAC-Bayesian bound for each model to provide a theoretical perspective on its generalization ability. I also perform an ablation study by removing regularization to observe its impact, and visualize loss curves across epochs to show training stability.

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Dhruv Saxena:

Research based on "Regularization-Driven Generalization in Few-Shot Learning: PAC Bayes Bound as Explanatory Tool".

Sustain Track - Interactive and Accessible Carbon Footprint Analyzer

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Abstract:

Keeping an eye on our carbon footprints is important if we want to tackle climate change effectively. Traditional methods for tracking carbon emissions often fall short. They just don't grab people's attention or keep them engaged. So, this paper dives into a new approach: a fun and user-friendly system for monitoring carbon footprints, featuring a chatbot interface. Yes, chatbots, these nifty tools can help folks track and cut down on their emissions, thanks to some cool artificial intelligence (AI). It's all about using chatbot technology to encourage more sustainable behaviours. The developed study is an evolution of current behavioral intervention frameworks and carbon assessment methodologies. components of the proposed system are One-On-One conversations, AI recommendations, and real-time tracking of user data about lifestyle choices concerning energy, transport, and food. The chatbot-based tracking increases awareness about the carbon footprint and further encourages physical activity levels, as the study concludes. Retention, as well as a more sustained targeted behavior change. Chatbot technology also has the potential for consumers and companies to drive action as part of global decarbonization solutions, raising levels of narrative experience and participation in carbon counting.

1. INTRODUCTION

Being conscious of the amount of carbon we emit has become increasingly essential due to the battle against climate change. A carbon footprint refers to the total of (CO₂) and other greenhouse gas emissions generated directly or indirectly by human actions. Traditional tracking methods rely on manual data input and fixed calculations, which lack the benefits of instant accessibility and do not offer any interactive elements or time-saving advice [1]. Consequently, there is an urgent requirement for a clearer understanding of consumers' energy behaviors in order to implement changes that ultimately result in effective emission reductions. One of the most transformative solutions in this domain has been the introduction of AI-driven chat tools. In contrast to long-standing traditional programs, chatbots act as a platform for interactive dialogue with users, resulting in a positive user experience and promoting greener choices through the utilization of AI technology. They not only have the ability to gather data in real-time but can also provide pertinent information to support energy management across areas like waste, food, and transportation [2]. The field of AI has proposed that the present integration with environmental preservation has

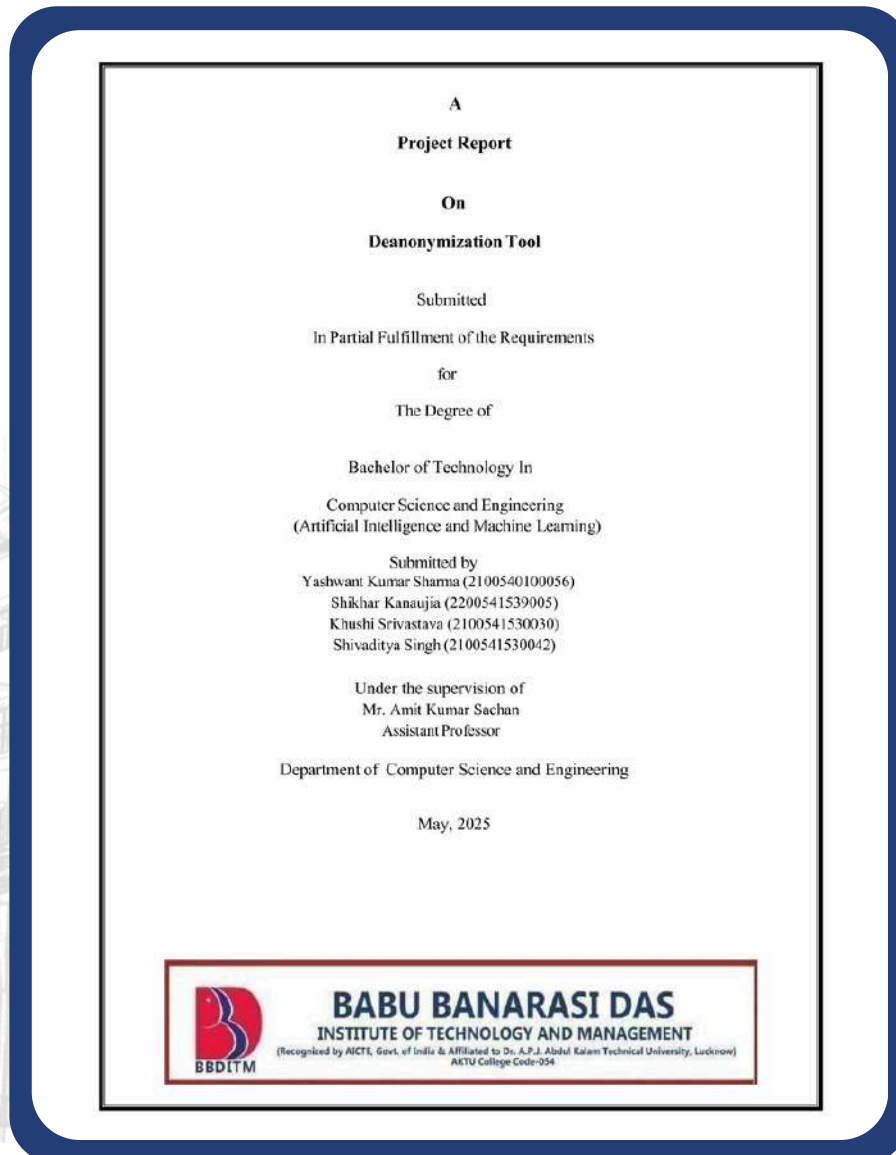
made significant progress. We have already seen the applications of machine learning in waste management, route optimization, and energy forecasting [3]. However, the use of chatbots for accessible carbon tracking is still quite limited. There is a deficiency in initiatives to encourage user involvement in the emission of carbon footprints. One contributing factor is that many users fail to grasp the underlying complexity of carbon accounting or are in fact unable to trace their carbon footprints due to a lack of information [4]. The introduction of chatbots has streamlined and clarified the previously unclear aspects of communication and discussion between users and bots, facilitating a conversational flow where chatbots encourage users in their daily lives at every step until it becomes a normal and habitual practice. These bots are designed to be sustainable, capable of providing real-time feedback that allows you to monitor your progress, send reminders when you forget, and notify you of actions needed to reach your goals, thus fostering ongoing engagement in emission reduction efforts [5]. By simplifying sustainability data and integrating it into everyday conversations, chatbot technology bridges this gap. Chatbots can influence user behavior and promote sustained involvement in carbon reduction efforts by delivering real-time feedback, reminders, and practical information [6]. In addition to a comprehensive approach, virtual assistants can aid the

Monika Yadav, Dolly Mauraya, Risha Ritika, Deepanshi Nigam:
Research on Sustain Track- Interactive and Accessible Carbon Footprint Analyzer,
published in **International Journal of Scientific Research and Engineering**
Development(IJSRED),

ISSN No.: 2581-7175, Volume: 08, Issue: 03 May, 2025.



Arun Sahani, Saumya Srivastava:
Modernize the traditional examination system using "EduTest Portal using Java with Spring Boot", published in STM Journals,
 ISSN No.: 2455-1821, Volume: 12, Issue: 02 May, 2025.



Shikhar Kanaujia, Shivaditya Singh, Yashwant Kumar Sharma, Khushi Srivastava:
A Machine Learning–Based Deanonymization Tool for Analyzing Anonymized
Network Traffic, published in International Journal of Scientific Research in
Engineering and Management(IJSREM), ISSN No.: 2582–3930, Volume: 09, Issue: 05
May, 2025.

NPTEL



Deepanshi Nigam completed the 8 week course(July-Sep 2023) based on "DataBase Management System" with a consolidated score of **53%**, organised by **Indian Institute of Technology, Kharagpur.**

INTERNSHIPS



Shivaditya Singh successfully completed the 80-hour training program on "**Mern Stack & DSA**" from 18th July 2024 to 30th August 2024 conducted by **ShapeMySkills by Ducat, Noida** in association with **Babu Banarasi Das Institute of Technology and Management**.

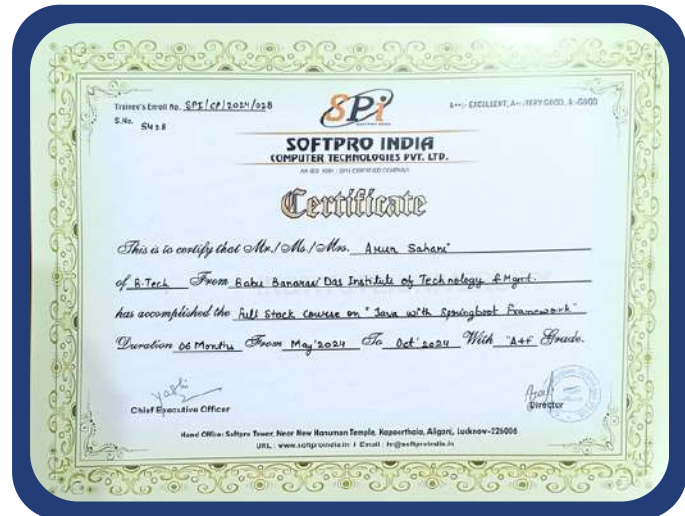
SPORTS & CULTURAL FEST

Ms. Anushka Srivastava of BBDITM got 1st position in Blueprint under Technical event during Utkarsh'25 Annual Fest organised by BBD Educational Group, Lucknow from 23rd to 25th February, 2025.



Ms. Anushka Srivastava of BBDITM got 3rd position in Hindi Debate under Literary category during Utkarsh'25 Annual Fest organised by BBD Educational Group, Lucknow from 23rd to 25th February, 2025.

Mr. Arun Sahani of BBDITM completed the 6-months Full Stack Course on "Java with Springboot Framework" from May,2024– Oct,2024 with "A+" Grade from SoftPro India Computer Technologies Pvt. Ltd.



Mr. Arun Sahani of BBDITM was proudly awarded as a key presenter in **Sustainable AI 2025: International Conference on AI for a Greener Planet** for his phenomenal and worthy presentation on topic "EduTest Portal using Java with Spring Boot" from 21st to 23rd February,2025 conducted by Nano Science and Technology Consortium.

Pratibha Pal secured 3rd position in Story Writing Competition under the event "Say No to Plastic" organized by Social Club in association with Humanities Department on April 29,2025.



Mr. Manash Mishra of BBDITM got recognition under his Literary event during Utkarsh'25 Annual Fest organised by BBD Educational Group, Lucknow from 23rd to 25th February, 2025.

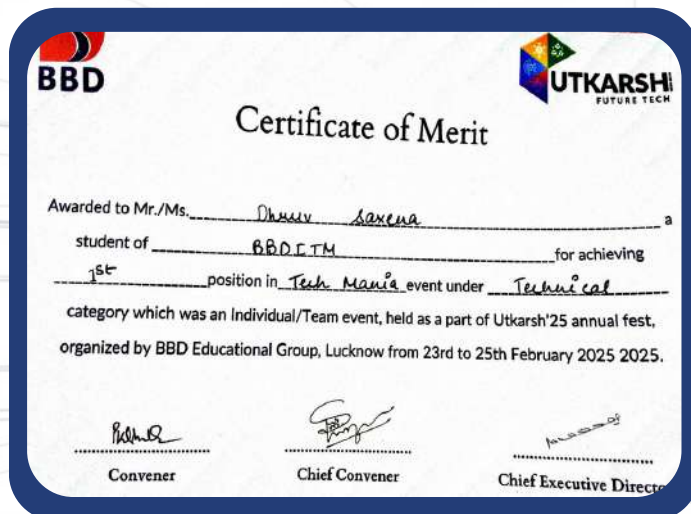


Mr. Manash Mishra of BBDITM participated under "Ek Prithvi, Ek Swasth ke liye Yog" under International Yoga Day(21st June 2025). His participation was highly awarded.

Mr. Manash Mishra of BBDITM got 3rd position in Think Tank under Technical event during Utkarsh'25 Annual Fest organised by BBD Educational Group, Lucknow from 23rd to 25th February, 2025.



Mr. Dhruv Saxena of BBDITM achieved 2nd position in Fine Arts event under Gesture Frame Category held as part of Utkarsh'25 Annual Fest, organised by BBD Educational Group, Lucknow from 23rd to 25th February, 2025.



Mr. Dhruv Saxena of BBDITM achieved 1st position in Tech Mania event under Technical Category held as part of Utkarsh'25 Annual Fest, organised by BBD Educational Group, Lucknow from 23rd to 25th February, 2025.

Mr. Shikhar of BBDITM participated in Kho-Kho(Boys) event and secured 1st position at Dr. Abdul Kalam Technical University Sports Fest, 2024-25 (Zonal Level) held on 24th-25th October 2024.



Mr. Shubham Kumar Dubey of BBDITM has participated in the event "Software Exhibition" held on 6th December, 2024 at CA Block, SOCA, BBD University, Lucknow.



Mr. Shubham Kumar Dubey of BBDITM got recognition for his participation in Tech-Expo under Technical event during Utkarsh'25 Annual Fest, organised by BBD Educational Group, Lucknow from 23rd-25th February, 2025.

Mr. Shubham Kumar Dubey of BBDITM achieved 3rd position in Robo Sumo Challenge event at Dr. Abdul Kalam Inter-Technical University Literary, Management and Technical Fest, 2024-25 (Zonal Level) held on 29th-30th November, 2024.



Mr. Shubham Kumar Dubey of BBDITM got recognition for his participation in Robo Building Workshop organised on 18th-19th November,2024 by the Robotics Club of BBDITM and in collaboration with IEEE BBDITM STB.

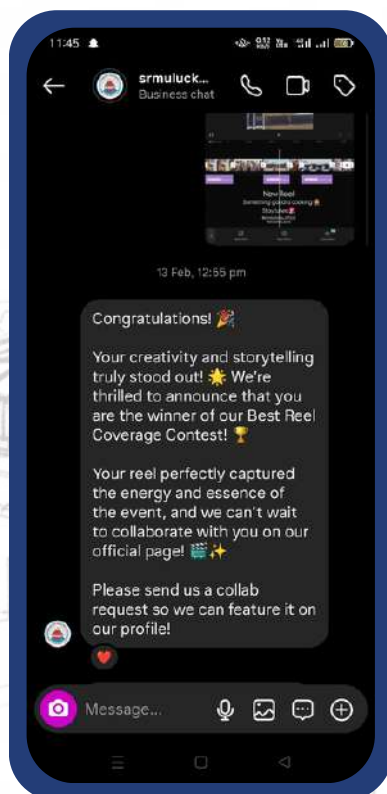


Mr. Swapnil Shukla was certified for his great performance in the Cricket tournament organised by Govt. J.K. Cancer Institute, Kanpur,U.P. on the occasion of World Cancer Day on 4th February,2025.

Mr. Swapnil Shukla was certified for his great performance in the Inter-District Cricket Tournament by the Yuva Shakti Foundation on the occasion of Ram Navami on the date of 6th April,2025.



Mr. Pushkar Srivastava of B.B.D. secured "Winner" position in Kho-Kho in "Disha'25 (Annual Fest)" from April22-April26,2025.



Mr. Chitransh Anand Srivastava was awarded the winner for **Best Reel Coverage Contest** organised by **Shri Ramswaroop Memorial University, Barabanki,U.P.**

Ujjwal Kushwaha, Manash Mishra and Shikhar Srivastava of team **Squad 404(Group 4)** has been officially shortlisted to represent **Babu Banarasi Das Institute of Technology and Management(BBDITM)** for **Infosys Makeathon 6.0**. Their use case is "**Smart Spaces Intelligent Energy Management System**".

Dear Team Squad 404(Group 4),

This is to inform you that after careful internal evaluation of all submitted entries for **Infosys Makeathon 6.0**, your team has been officially shortlisted to represent **Babu Banarasi Das Institute of Technology & Management, Lucknow**, for the next competition stage.

Please find the final details as submitted to Infosys:

Team Name: Squad 404 (Group 4)
College Name: Babu Banarasi Das Institute of Technology & Management, Lucknow

Use Case: Smart Spaces Intelligent Energy Management System

Team Members:

1. Ujjwal Kushwaha - zbytes0@gmail.com | +91 9896000000
2. Manash Mishra - manashmishra.soraon@gmail.com | +91 9896000000
3. Shikhar Srivastava - srivastava.shikhar2709@gmail.com | +91 9896000000

VIRTUAL MASTER CLASS

Mr. Shubham Kumar Mishra was awarded for successfully completing the course "Introduction to Artificial Intelligence" on February 6th, 2025 by Infosys SpringBoard.



Mr. Shubham Kumar Mishra was awarded for successfully completing the course "Introduction to Deep Learning" on February 6th, 2025 by Infosys SpringBoard.

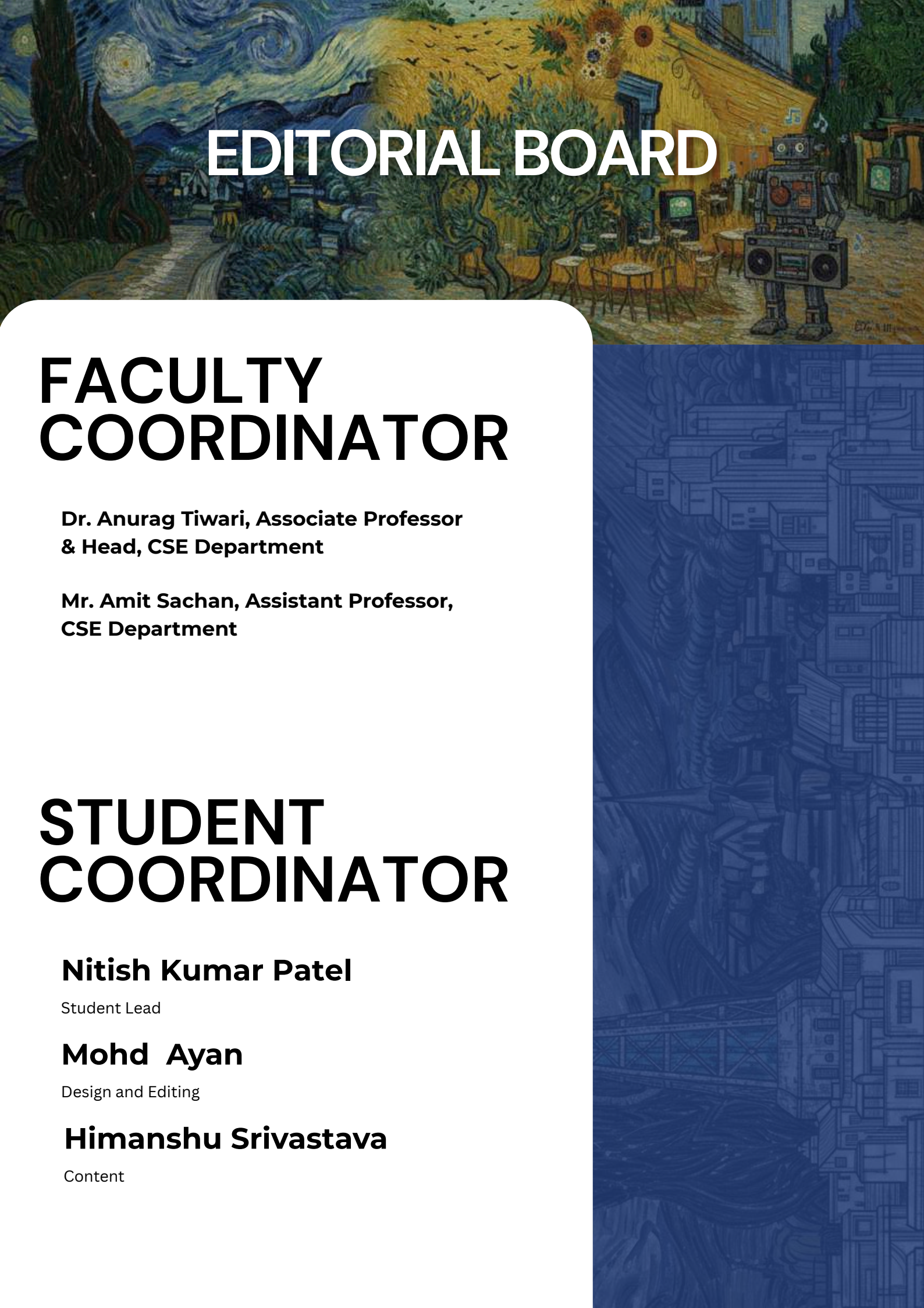
Mr. Shubham Kumar Mishra was awarded for successfully completing the course "Introduction to Data Science" on May 31st, 2025 by Infosys SpringBoard.



Mr. Shubham Kumar Mishra was awarded for successfully completing the course "Introduction to Natural Language Processing" on February 7th, 2025 by Infosys SpringBoard.

Mr. Shubham Kumar Mishra has successfully completed a **4-week course** on **Soft Skills Course Online-Complete Professional Development Training** by **GeeksforGeeks**.





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Content