Nikhil Singh Shekhawat

nikhilsinghshekhawat2003@gmail.com | +91 – 8504815644 | LinkedIn | Madhya Pradesh, India

EDUCATION

SRM Institute of Science and Technology, SRM University, Chennai, India *CGPA – 8.2/10*
B. Tech in CSE with specialization in Cloud Computing *2021 – 2025*

PROJECTS

AI-Driven Debris Classification System for Autonomous Underwater Vehicles *Jan 2025 – May 2025*
- Leading the AI-Driven Debris Classification System for Autonomous Underwater Vehicles project, a multidisciplinary research initiative in collaboration with the Directorate of Entrepreneurship and Innovation (DEI).
- Secured INR 9,00,000 funding from SRM Innovation and Incubation Centre (SIIC) (Sept 2024) and received support from DRDO, NIOT, Nvidia, SolidWorks, and Altium
- Supported environmental monitoring and marine conservation efforts by providing real-time data on underwater litter

Automated Helmet Detection and License Plate Recognition, SRM University *Aug 2024 – Oct 2024*
- Led the development of an AI-powered traffic monitoring solution utilizing YOLOv8s model for real-time detection of helmet compliance and vehicle license plates in complex environments
- Integrated convolutional neural networks (CNNs) and EasyOCR to optimize recognition accuracy under varying conditions, including occlusion and lighting inconsistencies
- Achieved an overall accuracy of 93.7% and recall rate of 92.6%; demonstrated an excellent mAP50 of 95.8% and mAP50-95 of 81.8% in model performance

Designing an Adaptive MAC Protocol for Efficient Data Aggregation in Underwater Acoustic Sensor Networks, SRM University *Dec 2023 – Apr 2024*
- Optimized communication efficiency by dynamically adjusting to varying underwater conditions and data traffic patterns
- Enhanced data aggregation and transmission reliability, reducing latency and energy consumption in underwater acoustic sensor networks
- Contributed to effective underwater monitoring and data collection, supporting applications in environmental monitoring and maritime security

INTERNSHIPS/SUMMER TRAININGS

State Bank of India, Durgapur, West Bengal, India *May 2024 – May 2024*
- Developed and tested banking applications and tools, improving functionality and user experience
- Improved resource allocation and targeted financial planning by presenting data-driven recommendations to management
- Utilized statistical analysis to create predictive models, enhancing the bank's financial forecasting and resource allocation strategies

Grasim Industries Limited, Nagda, Madhya Pradesh, India *Jun 2023 – Jul 2023*
- Processed and refined raw employee feedback data, including text normalization and tokenization, to prepare it for sentiment analysis using NLP techniques
- Analysed sentiment trends to identify recurring issues and areas of concern, providing actionable insights to improve employee satisfaction and engagement
- Created detailed report and visualizations of sentiment analysis results, highlighting key findings and recommending targeted actions to address identified issues

PAPER PRESENTATIONS/RESEARCH PUBLICATIONS

Dynamic MAC Protocol for Layered Data Aggregation in Underwater wireless Sensor Networks, ICoICI 2024, JCT College of Engineering and Technology, Coimbatore, India *Aug 2024*
- Designed and Implemented a Dynamic MAC Protocol utilizing Time Division Multiple Access (TDMA) and multi-channel techniques to optimize layered data aggregation in Underwater Acoustic Sensor Networks (UASNs)
- Achieved significant improvements in network throughput and reduced collision rates through effective protocol design
- Integrated hybrid algorithms (PSO and ACO) for efficient node selection and multi-hop data transmission, optimizing routing and minimizing energy consumption
- Developed an adaptive algorithm for packet length and time slot allocation using fuzzy logic and Grey Wolf Optimizer (GWO), ensuring resource-efficient and collision-free communication in congested networks

Short Term Traffic Flow Forecasting Using Deep Learning Algorithms, ICETEMS *October 2024*
Submitted, Under Review
- Implemented LSTM and GRU deep learning algorithms to capture sequential patterns and long-term dependencies in traffic data for improved forecasting accuracy
- Leveraged Support Vector Regression (SVR) and Random Forest Regression (RFR) for high-dimensional traffic datasets, achieving accuracy rates of up to 94.5%
- Established a new benchmark for precise short-term traffic forecasts, this work establishes the foundation for combining multimodal data and transfer learning improving real world application

ACHIEVEMENTS

- Certificate of Merit in Mathematics, Class X Issued by Central Board of Secondary Education *Oct 2019*
- Performance Scholarship Issued by AWOO Foundation (total of INR 3,60,000 for bachelor's degree) *2021-25*
- Won the "Tenacity Award" at TAC Challenge 2024, an international subsea drone competition, Norway Team – SRMAUV *June 2024*
- Won third prize at national level technical hackathon NEXUS 24. Project Title – Remotely operated underwater vehicle for oceanographic research. Team - SRMAUV *Feb 2024*

POSITION OF RESPONSIBILITY

SRMAUV (college team of subsea robotics) *2024 – 2025*
Technical Project Lead
- Technical Project Lead at SRMAUV, overseeing industry-level tasks such as subsea docking, pipeline inspection, and valve intervention.
- Led the development of intra-vehicle communication setup and enhanced real-time decision-making capabilities for autonomous underwater vehicle operations.
- Developed autonomous telemetry systems for industry-level task execution using Robot Operating System (ROS) for the 6th iteration of SRMAUV, 'VATKHD'
- Tested and debugged software rigorously to ensure reliability and robustness in challenging underwater environments

COMMUNITY SERVICE

Volunteer, SNEH foundation India, Nagda *2022 – Present*
- Contributed to sales of pottery and handicraft items made by handicapped children.
- Participated in health initiatives like Project Vatsalya, aimed at improving children's health and hygiene conditions in underserved communities
- Conducted a survey under Project Vatsalya across three nearby villages, identifying a correlation between increased arsenic levels in groundwater and higher rates of stillbirths and pregnancy losses in the area
- Analyzed and reported environmental health impacts, contributing to raising awareness and initiating preventive measures

SKILLS

- **Programming Language:** Python, C++, MATLAB, R, JavaScript, Basic SQL, PHP
- **Deep Learning:** Computer Vision, Natural language processing, Neural networks
- **Tools:** Gazebo, Tableau, TensorFlow, Git/GitHub, AWS
- **Robotics:** ROS, Machine Vision, Autonomous Vehicles
- **Soft skills:** Research, Collaboration, Ethical Awareness, Adaptability to Interdisciplinary Knowledge