Charan Chowdary Singu

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Education

MSc in Computer Science | University College Dublin, Ireland | Sep 2024 - Jan 2026

- Relevant coursework: Cloud Computing, Information Security, Machine Learning

B.E. in ECE | R.M.D Engineering College | Aug 2020 – May 2024

Technical Skills

- **Languages:** Java, Python, SQL, JavaScript/TypeScript
- **Backend:** Spring Boot, Flask, Fast API, Node.js, Microservices, REST, RabbitMQ
- **Databases:** PostgreSQL, MySQL
- **Frontend:** React, React Native, Redux, HTML/CSS, Tailwind CSS
- **DevOps & Cloud:** Docker, Kubernetes, CI/CD, AWS
- **Practices:** Git, Agile/Scrum
- **Cybersecurity:** Ethical Hacking, Penetration Testing, Cryptography, Firewall Management, Linux Networking

Experience

Innovation Engineer | Forge Innovation and Ventures | India | Oct 2023 – May 2024

- Collaborated with multidisciplinary engineering and design teams to deliver UI/UX, IoT, and smart system solutions aligned with real-world industrial requirements.
- Engineered a non-invasive fuel measurement system using sensor technologies, achieving ~95% accuracy while improving operational safety in coal mining environments.
- Developed user interfaces for medical robotic systems and fintech platforms, reducing operational complexity by up to 20% and improving user engagement by 15%.
- Conducted smart city feasibility studies and built IoT prototypes, improving data reliability by ~25% and supporting data-driven decision making.

Intern – Computer Data Management Group (CDMG) | National Atmospheric Research Laboratory (NARL) | India | Jun 2023 – Aug 2023

- Assisted in strengthening organisational network security through firewall scanning, vulnerability assessment, and penetration testing activities.
- Applied cryptography and Linux-based networking techniques to secure internal data communication channels.
- Gained hands-on exposure to secure system operations, data integrity practices, and technical documentation.
- Supported research teams by implementing SQL-based data retrieval and structured data management solutions.

Projects

SmartTrip NYC - Crowd-Aware Urban Itinerary Planner

- Led front-end development during a 12-week summer research practicum, delivering a fully functional itinerary planning
- Designed and implemented responsive, user-centric interfaces using modern frontend technologies, translating complex backend data into intuitive user experiences.
- Integrated frontend components with RESTful APIs provided by backend services (Spring Boot and Flask), ensuring seamless data flow and application stability.

- Implemented client-side authentication flows (JWT-based session handling and secure route protection) in collaboration with backend engineers.
- Built reusable, modular UI components and applied state management patterns to improve maintainability and scalability of the frontend codebase.
- Collaborated closely with backend, data, and UX teams to debug integration issues and ensure smooth end-to-end functionality across environments.

Dublin Bikes – Real-Time & Predictive Web App

- Built a Flask backend with MySQL that integrates live data feeds and ML models for bike availability prediction.
- Trained ML models, including linear regression and random forest, to support data-driven decision-making.
- Provisioned and deployed the application on AWS EC2 for scalable hosting.
- Facilitated Scrum standups, managed sprint planning, and provided weekly progress updates, improving team coordination and ensuring timely project completion.

Non-Invasive Fuel Measurement System (Forge Ventures)

- Designed a non-intrusive sensor-based system for accurate fuel level estimation.
- Eliminated the need for physical tank intrusion, improving operational safety.
- Enabled real-time fuel monitoring through continuous sensor data capture.
- Achieved high measurement accuracy (~95%) in industrial testing environments.
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- Reduced maintenance effort and downtime for heavy industrial operations.

Smart Jacket IoT System for Coal Miners

- Designed a wearable IoT-based safety system for underground coal mining environments.
- Integrated sensors to monitor real-time health vitals of miners.
- Implemented environmental sensing for hazardous gas and temperature detection.
- Enabled automated alert mechanisms for emergency situations.
- Achieved a 50% reduction in incident response time, improving worker safety and preparedness.