Avinash Goyal

avinashg0y4l@gmail.com | +91 6202186800 | LinkedIn | GitHub

OBJECTIVE

Final Year B.Tech Student in Electronics & Communication Engineering with hands-on experience in embedded systems development, real-time systems, device drivers, and firmware design. Proficient in optimizing system performance, enhancing reliability, and delivering innovative solutions. Skilled in programming (C, C++, Python), debugging, testing, and integrating hardware with embedded software. Passionate about working with cutting-edge technologies to develop efficient, high-performance systems.

EDUCATION

Bachelor of Technology in Electronics & Communication Engineering
2021 – 2025
Government Engineering College Vaishali — Vaishali, Bihar, India
Relevant Coursework: Embedded Systems | Digital Logic Design | Microprocessor Systems | Operating Systems | Communications & Network

INTERNSHIPS

Project Intern – **IIT Jodhpur, Department of Civil and Infrastructure Engineering**
May 2024 – July 2024

- Worked on a Traffic Flow Simulation Model for optimizing traffic management and safety.
- Developed a Model for vehicle counting and classification, improving real-time traffic monitoring systems.
- Calculated key traffic safety metrics including Time to Collision (TTC), Deceleration to Safety Time (DST), Post Encroachment Time (PET), and Gap Time (GT).
- Collaborated with a multidisciplinary team to simulate traffic scenarios and assess safety at intersections.
- Supervised by the Associate Prof. Dr. Ranju Mohan

Machine Learning Intern – **NIELIT Gorakhpur (NIELIT/GKP/OL/L17/19090)**
Nov 2024 – Dec 2024

- Explored supervised learning (classification & regression) and unsupervised learning
- Focused on model selection, bias-variance trade-off, and performance optimization
- Learned data visualization techniques for real-world machine learning applications

Salesforce Developer Intern – **Smartinternz & NEAT Cell-AICTE**
Dec 2023 – Jan 2024

- Learned Salesforce fundamentals, organizational setup, and process automation.
- Developed skills in Apex programming, debugging, and Lightning Web Components (LWC).
- Gained experience with VS Code, CLI setup, and API integrations.
- Achieved Super Badges: Apex Specialist, Process Automation Specialist, and Developer Super Set.

MathWorks Virtual Intern – **NEAT, AICTE**
3 Months

- Specialized in MATLAB, image processing, and signal processing.
- Gained experience in machine learning and deep learning workflows.
- Applied skills to solve real-world engineering challenges.

ACHIEVEMENTS

- **MathWorks Minidrone Competition-2024** 🔗
  - Finalist in the Minidrone Competition 2024, MathWorks Inc. at IISc Bengaluru.
- **Intelligent Wireless Connectivity for Post 5G Era – SERB Workshop, IIT Patna**
  - Gained insights into advanced wireless communication technologies.

PROJECTS

1. **Vehicle Speed Estimation and Traffic Safety Metrics Application** 🔗
   - **Overview:**
     This project focuses on real-time vehicle detection and safety metrics calculation using video processing. It uses YOLO for vehicle classification and tracks metrics like Time to Collision (TTC), Deceleration to Safety Time (DST), Post Encroachment Time (PET), and Gap Time (GT).
     - ✓ Real-Time Vehicle Detection: Using YOLO for vehicle classification.
     - ✓ Perspective Transformation: Bird's-eye view analysis.
     - ✓ Traffic Metrics: TTC, DST, PET, and GT calculations.
     - ✓ User Interface: Allows video source selection and parameter configuration.
   - **Technologies:** Python, OpenCV, YOLO, NumPy, Supervision (sv), Pandas.
   - **Applications:** Traffic safety analysis, accident prevention, and real-time vehicle tracking.

2. **YouTube Video Frame Extraction and PDF Generator** 🔗
   - **Overview:**
     Developed a Flask-based web application to extract unique frames from YouTube videos and generate a downloadable PDF containing these frames with timestamps.
     - ✓ Utilized yt-dlp to download YouTube videos.
     - ✓ Implemented OpenCV to extract and compare frames for uniqueness using SSIM.
     - ✓ Generated PDF reports using FPDF with Pillow for image processing.
     - ✓ Enabled users to input a YouTube URL, automatically download the video, extract frames, and download a PDF with annotated frames and timestamps
     .
3. **Mars Rover Opportunity** 🔗
   - **Overview:**
     Led the design and development of a prototype Mars rover for a planetary exploration challenge.
     - ✓ Coordinated a team to build a functional Mars rover model, showcased at Patna Planetarium.
     - ✓ Focused on key features such as mobility, obstacle detection, and remote operation.
     - ✓ Integrated **Electronics and communication systems** to enhance rover control and performance.
     - ✓ Conducted simulations and tests to validate rover functionality under realistic conditions.

SKILLS

- **Programming & Languages**: C, C++, Python, Assembly Language, MATLAB
- **Embedded Development**: Microcontroller programming, Device driver design
- **System Design**: Embedded system architecture for resource-constrained environments, hardware/software integration
- **Communication Protocols**: I2C, SPI, UART, TCP/IP, BLE, Zigbee
- **Software & Modeling**: MATLAB, Simulink, Gazebo, ROS, ROS2 ,UML, familiar with Agile methodologies, R
- **Version Control & Collaboration**: Proficient in Git, collaborative development workflows

COURSES / CERTIFICATIONS 🔗

- ✓ **Database Management System (DBMS)** — NPTEL, July-2024
- ✓ **Operating Systems** — NPTEL, July-2024
- ✓ **Fundamentals of Semiconductor Devices** — NPTEL, March-2024
- ✓ **Advance Diploma in Computer Application (ADCA)** — SAI Softnet, 2020
- ✓ **IT Essentials** — CISCO Networking Academy, 2023
- ✓ **CPA: Programming Essentials in C++** — CISCO Networking Academy, 2022
- ✓ **Embedded Systems** — Internshala, March-2022
- ✓ **Developing Soft Skills & Personality** — NPTEL, March-2022