AKSHAT SINGH

LinkedIn ◇ Portfolio ◇ GitHub
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EDUCATION

Indian Institute of Technology (IIT) Mandi, Himachal Pradesh (Expected 2026)
B.Tech, Computer Science and Engineering

SKILLS

Programming Languages	C++, Python, JavaScript, TypeScript
Frontend Technologies	Tailwind CSS, ReactJS, Redux, Streamlit, Postman
Backend Technologies	NodeJS, ExpressJS, Flask, REST APIs, FastAPI
Database Management	PostgreSQL, MySQL, MongoDB, Firebase
DevOps Tools	Docker, Kubernetes, Jenkins, CI/CD, GCP

PROJECTS

Sadak - Traffic Flow Optimization and Congestion Management (GitHub) (Product)
- Engineered a traffic optimization system integrating encroachment detection, trajectory classification, and multi-engine benchmarking, enhancing traffic analysis efficiency by 30%
- Trained a custom YOLOv8 model for Indian traffic conditions, achieving 93% detection accuracy on a dataset of 10,000+ images
- Automated dwell time analysis to identify congestion hotspots, reducing test-simulated congestion by 20%
- Technologies: Python, OpenCV, YOLOv8, Streamlit, Docker, GCP

BhedChaal - Crowd Analysis and Panic Simulation System (GitHub)
- Developed an advanced crowd monitoring system with CCTV-to-top-view perspective transformation, achieving 90%+ accuracy in congestion detection and bottleneck identification
- Implemented a multi-agent social force model for realistic panic/stampede simulations, enabling predictive analysis of evacuation scenarios and crowd movement patterns
- Engineered real-time crowd density estimation with heat map visualization, integrating person detection and tracking through YOLOv8 models
- Created a panic propagation algorithm to simulate crowd behavior during emergency situations, allowing risk assessment for crowd management strategies
- Technologies: Python, OpenCV, PyGame, YOLOv8, Streamlit, Agent-based Modeling

Snow Shield - Avalanche Safety Alerting System (GitHub) (Product)
- Developed a real-time snow safety platform enabling instant incident reporting and emergency alerts, serving a community of snow sports enthusiasts and rescue teams
- Implemented a location-based alert system with pincode-specific notifications, reducing emergency response times by providing precise incident locations and severity levels
- Built a comprehensive admin dashboard for emergency services with real-time SOS tracking and warning management, facilitating efficient rescue operations
- Technologies: React, Firebase, Tailwind CSS, NodeJS, Firebase

Kanban Board (GitHub) (Product)
- Built an interactive Kanban board for 100+ users, enabling real-time task management with drag-and-drop functionality
- Optimized workflow visualization with dynamic swimlanes, improving task organization efficiency by 25%
- Technologies: NextJS, ReactJS, TypeScript, Tailwind CSS, PostCSS

ACHIEVEMENTS

- First runner-up of the CS-671 Hackathon conducted by HCLTech: Developed an advanced crowd monitoring system
- First runner-up of the Karnataka Police Datathon'24: Developed a real-time traffic congestion management tool, reducing traffic analysis time by 30%

LEADERSHIP AND EXTRACURRICULAR ACTIVITIES

- Core Team member of SNTC Web Development Cell (Sept. 2023 - Sept. 2024)
- Cultural Coordinator of Surajtaal Hostel (Present)
- Fine Arts Cup Leader in Inter-IIT Cultural Meet 7.0 (December 2024)