Tanish Misra

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Profile

Sophomore CS student at Purdue applying ML and software engineering to production systems with real constraints, having experience across data pipelines, agentic tools, and embedded software, with a passion for Formula 1 and photography.

Education

Purdue University West Lafayette, IN
B.S. Computer Science (Machine Intelligence & Security Concentrations), Statistics Minor *Aug. 2025 – Dec. 2028*
- Coursework: Problem Solving & OOP, Programming in C, The Data Mine, Linear Algebra, Discrete Mathematics
- Activities: Purdue Electric Racing, Electric Vehicle Club, Claude Builder Club, Google Developer Group, F1 @ Purdue

Experience

Toyota Connected Experiences Division (CXD) Plano, TX
Automation Co-op *May 2026 – Present*
- Automating in-vehicle infotainment (IVI) test case generation from 1,000+ manual procedures via a Python LLM pipeline with structured JSON output, reducing manual QA effort.

The Data Mine, Purdue University West Lafayette, IN
Undergraduate Data Science Researcher *Jan. 2026 – Present*
- Completed 12 projects performing Exploratory Data Analysis (EDA), data wrangling, and geospatial visualization using pandas, Polars, NumPy, seaborn, GeoPandas, and Folium. Accepted into Corporate Partners for Fall 2026.

Q Spark Group (QSG) Remote
Data, Analytics, and AI Intern *Mar. 2024 – Jul. 2025*
- Led a PII privacy initiative training Transformer NER models on 1M+ synthetic records, improving recall to 90%.
- Analyzed 250,000+ SQL records via DataFrames, performing metadata analysis to organize company-wide data access.

Purdue Electric Racing (PER) West Lafayette, IN
Software Team Developer *Jan. 2026 – Present*
- Developing embedded C firmware for STM32 nodes with git-hash version mismatch detection across microcontrollers.

Purdue Electric Vehicle Club (EVC) West Lafayette, IN
Autonomous Team, OpenCV Developer *Aug. 2025 – Present*
- Co-developed an HSV-based OpenCV track detection pipeline computing steering angles for an autonomous electric kart vehicle, deployed in a Dockerized workflow.

Projects

Candle for Choroideremia (CHM) | *Python, FastAPI, PostgreSQL, pgvector, OpenAI, RAG* Apr. 2026
- Research dashboard for CHM patients aggregating 29 trials and 475 publications, featured in a CureCHM press release, adopted at candleforchm.org, and validated by 3 blind patients.
- Built on PostgreSQL/pgvector with FastAPI, a RAG pipeline, medical safety guardrails, and WCAG-compliant UI.

Securify | *Python, LangGraph, RoBERTa, OpenAI | AlgoFest 2026 Hackathon Semi-Finalist* Apr. 2026
- Security layer for LLMs that strips PII and blocks prompt injections before reaching the model; fine-tuned RoBERTa-base on 160,000 examples across 10 PII classes to 0.940 out-of-distribution micro F1.
- Built a two-layer security agent with 18 regex injection filters; passed 22/22 integration and 34/34 feature tests.

Autonomous F1 Broadcast Director | *Python, REST APIs, Pydantic* Feb. 2026
- Automated TV director enhancing race day viewing by rotating onboard camera feeds in MultiViewer; a Python daemon polls 9 OpenF1 endpoints every 4 seconds, scoring all 22 drivers across 18 weighted dimensions.
- Engineered switching logic with a 12-second dwell, 15% score threshold, 6-swap/minute budget, and Safety Car freezes.

Technical Skills

Languages: Python, Java, C, TypeScript, JavaScript, SQL
AI/ML & Data: PyTorch, spaCy, LangChain, LangGraph, OpenAI API, Anthropic API, OpenCV, Pydantic, matplotlib, pgvector, PostgreSQL, SQLite, Pandas, NumPy
Developer Tools: Git/GitHub, Docker, REST APIs, React, Next.js, Vercel, Railway
Certifications: AWS & DeepLearning.AI: Generative AI & LLMs | Google Cybersecurity: Foundations, Security Risks, Network Security | University of Michigan: Programming in C