

Tanmay Singla

765-771-9582 | singlat@purdue.edu | Google Scholar | linkedin.com/in/tanmay-singla/

EDUCATION

Purdue University

West Lafayette, IN

M.S. & B.S. in Computer Engineering, G.P.A: 3.9/4.0

Aug'21 – Dec'26

Relevant Coursework: Networks, Artificial Intelligence, Compilers and Translators, ASIC Design, Computer security, Microprocessor Systems and Interfacing, Data Structures and Algorithms, Python for Data Science, System Design

Awards: Charles W. Brown ECE Scholarship, The Black Scholarship, and ECE Great Work Award

TA: ECE 461- Software Engineering (GTA), ECE 369 - Discrete Mathematics, ENGR 130/131, MA 266

PROFESSIONAL EXPERIENCE

Software Engineering Intern | Lennox | Carrollton, TX

Jun'25 – August'25

- Automated firmware testing and release pipelines for thermostat & control boards
- Built a GUI tool with a local LLM-powered chatbot that uses natural language to trigger these pipelines, generate release notes/wiki docs, and answer user queries
- Added OTA updates, timeout detection, and multi-session support to improve reliability and efficiency
- Implemented real-time pipeline failure detection with suggested fixes and conversational troubleshooting support

Embedded Software Engineering Intern | Rheem Manufacturing | Atlanta, GA

May'24 – Aug'24

- Designed a modular controls algorithm for Heating Control System for various Water Heaters; created simulation environment; performed test-driven development and validated the models using Simulink and C
- Coded the synthesis files for MATLAB-generated code to test the modules on hardware and internal tools
- Developed controls designs for new products based on the systems requirements, validated and tested the systems

Software Security Research Assistant | Duality Lab | Purdue University

May'23 – Aug'24

- **Project 1:** Conducted comparative analysis on JSM and ZTD_{JAVA} based on NIST ZTA principles, supporting the development of ZTD_{SYS} and ZTD_{JAVA} for third-party software security. Injected vulnerabilities onto third-party software suites to evaluate ZTD_{JAVA} 's performance for a paper accepted at ICSE'25
- **Project 2:** Analyzed data, developing a coding scheme to classify key insights on software signing practices. Investigated software signing adoption trends and challenges for 2 papers accepted at USENIX'25 & ASE'26
- **Project 3:** First author of an empirical study using LLMs to analyze historical software supply chain security failures—prompt-engineered GPT and Bard to classify compromise type, intent, nature, and impact; GPT achieved 68% accuracy and aided extraction of “lessons learned”, accepted at ACM CCS SCORED'23

Hardware Engineering Intern | Rheem Manufacturing | Indianapolis, IN

Aug'23 – Dec'23

- Collaborated with test engineers to design and construct test fixtures for PCB testing; gained exposure to controls hardware failure diagnostics, electrical validation testing, and component qualification processes
- Prepared and released engineering specifications, design schematics, and qualification documents

PROJECTS

VFS — Software Lead | System Design and integration, Python, ROS, PX4

Nov'24 – Present

- Leading avionics integration: ensured ground station, Jetson, flight controller communication for off-board controls
- Developing sensor fusion and autonomy pipeline integrating LiDAR, stereo cameras, RTK GNSS on Jetson for real-time navigation and obstacle avoidance using CV and depth estimation.
- Leveraging computer vision algorithms for obstacle avoidance using stereo imagery and depth estimation
- Working on the avionics team to drive hardware–software integration, component selection, battery management

FAIL: Analyzing Software Failures Using LLMs | HTML/CSS, Django, OpenAI, AWS

Aug'24 – Present

- Interviewed engineers and found limited learning from software failures; identified need for automated tools
- Created a database of failure cases by extracting insights from news articles using LLMs and NLP techniques
- Developed softwarefailures.com to visualize incident trends and currently building an RAG-based chatbot to assist engineers in learning from historical failures

TECHNICAL SKILLS

- **Languages:** Python, C/C++, MATLAB, Verilog, Java, SQL, Swift, HTML/CSS, JavaScript
- **Frameworks & Libraries:** Django, ROS, Simulink, OpenCV, NumPy, PyTorch, Pandas, Scikit-learn
- **Tools & Platforms:** Git, Linux, STM32Cube, TeraTerm, Docker, AWS, PostgreSQL, Jupyter, CreateML