KANAV CHUGH

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EDUCATION

Georgia Institute of Technology   Atlanta, GA
M.S. in Electrical and Computer Engineering   *Expected: May 2026*

B.S. in Computer Engineering   *Graduation: May 2025*
    GPA: 3.8/4.0
    Coursework: Digital Design Lab, Data Structures, Algorithms, Machine Learning, Advanced Computer Architecture, VLSI Design

EXPERIENCE

Ramblin' Rocket Club - GNC   Atlanta, GA
Lead Software Engineer   *May 2024 – Present*
- Led a team of 20+ engineers to iterate avionics PCBs and program active control rockets, the first at Georgia Tech
- Integrated a wireless ground station with Go backend, SQLite database, and Flask application, latency lower than 1 ms
- Revamped software architecture by introducing RTOS, ARM debugging, DMA, JTAG, Docker, and multiprocessing to firmware

Google   Mountain View, CA
Hardware Engineering Intern   *May 2024 – Aug 2024*
- Worked with the EE Pixel Team on electrical system integration testing and automation for future phone models
- Automated shorting and voltage tests for PMICs and SoCs with a custom PCB, speeding testing by 9 times
- Built a Python GUI application for 14 validation items with Pandas and PyQt5, including multithreading on ARM CPUs

The HIVE Makerspace   Atlanta, GA
Student Researcher   *Aug 2023 – Present*
- Led ECE makerspace operations on the electronics lab and PCB fabrication, attracting over 7500 monthly visitors
- Conducted training sessions on embedded systems and benchtop tools for 200+ students/semester

SpaceX   Hawthorne, CA
Test Engineering Intern   *May 2023 – Aug 2023*
- Designed two actuator test systems to provide performance diagnostics for rotary components on Starship
- Spearheaded a test bench for transducers in NX and scripts with C++, the first successful build for the company
- Facilitated torque and oscillation testing for 24 electrical TVC actuators, all working on flight Raptor engines

LIDAR Lab   Atlanta, GA
Research Assistant   *Jan 2023 – Dec 2023*
- Worked with the LIDAR lab to program control structure and motion planning algorithms for three multipedal robots
- Utilized TensorFlow, Gazebo, and ROS 2 to simulate robot kinematics and motion planning on multiple terrain

Stebner Labs   Atlanta, GA
Undergraduate Research Assistant   *Aug 2021 – May 2024*
- Co-developed a mass flow sensor project for two additive manufacturing machines, data presented at a NASA conference
- Engineered a 2 GHz DAQ with 4 high-speed sensors using Verilog for parallel sensor processing and Python for data acquisition
- Simulated charge amplifier circuits using LTSpice for active feedback control for piezoelectric and triboelectric sensors

PROJECTS

SoC Hardware Accelerator | Linux, Computer Architecture, Operating Systems, Machine Learning, Deep Learning
- Implemented a custom hardware accelerator for LIDAR motion planning on a Zynq SoC, funded by Georgia Tech's ECE school
- Simulated separate data paths in Verilog and C++ for computer vision, optimizing power consumption under 1W
- Wrote custom embedded Linux kernel to manage processors and FPGAs, achieving 300x speedup over an ARM Cortex A9

GPU-Accelerated Rocket Dynamics Simulator | CUDA, PyTorch, Monte-Carlo, OpenMPI, OpenMP, OpenGL, C/C++
- Developed a supersonic rocket trajectory simulator with Python and C++, including OpenMP parallel processing
- Implemented Monte Carlo simulations using CUDA and Pytorch to process aerodynamics, wind and atmospheric conditions
- Built real-time visualization system with OpenGL, integrating OpenMPI for environmental data processing (netCDF4, windrose)

GNC Flight Computer | Altium, RTOS, ARM, Sensor Fusion, Memory
- Designed a PCB flight computer in Altium, including I2C, SPI, UART, and Ethernet routing on two STM32s
- Wrote a custom real-time operating system, 12 sensor drivers, and ARM-C cross compiler, optimizing memory performance by 150%
- Iterated PID, LQR, and EKF sensor fusion algorithms on an IMU and GPS in C for accurate position, velocity, attitude, and control

SKILLS

Engineering: Digital Design, Compilers, Circuit Analysis, ASIC Physical Design, Verification, Signal Processing, Localization
Libraries: TensorFlow, OpenCV, Sklearn, NumPy, Matplotlib, Pytorch, Jax, Isaac, CUDA, Flask, LCM, Eigen
Programming: Python, Rust, C/C++, ARM Assembly, Java, MATLAB, Verilog/SystemVerilog, VHDL
Hardware : FPGAs, SoC, CMOS Transistors, STM32, RPI, PCIe, I2C, SPI, UART, Ethernet, CAN
Software: Git, VS Code, MS Office, NX, SolidWorks CAD, Blender, ANSYS, Vivado, Altium, ROS, Simulink, Cadence, Confluence, Jira