Tanmay Shukla

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Education

Georgia Institute of Technology | Atlanta, GA *August 2024– Present*

Bachelor of Science in Computer Engineering, GPA 4.00 *Expected Graduation, May 2027*

Relevant Coursework: ECE 2020: Digital Systems Design**,** ECE 2031: Digital Design Lab, ECE 2035: Programming HW/SW Systems, ECE 2040: Circuit Analysis, CS 1331: Intro to Object Oriented Programming

Skills

Hardware Design: FPGA development (Intel/Altera Cyclone V), RTL & VHDL, Verilog/SystemVerilog, PCB design & layout, High-Level Synthesis, ARM Mbed, Raspberry Pi, Teensy, Arduino, STM32, RISC-V Architecture

Programming & Software: Intel Quartus Prime, ModelSim, Git/GitHub, Altium, KiCad, SolidWorks, Vivado, Linux, C, C++, Python, Java, SQL, MIPS Assembly

Electronics & Test/Protocols & Interfaces: Oscilloscope, Logic Analyzer, circuit analysis/debugging, UART, SPI, I^2C

Languages: English (native), Hindi (fluent), French (basic)

Experience

Avionics Hardware Lead, Stack Systems Engineer, Georgia Tech Experimental Rocketry *Jan 2025 – Present*

- Led avionics hardware team and collaborated with other subteams in designing the architecture and fabricating custom PC104 embedded systems stack for a two-stage rocket targeting the Kármán line (Space).
- Designed and routed the ADCS board (flight computer) for flight control and telemetry, projected to reach 100km.
- Co-developed hardware/software architecture, including 1000+ lines of embedded C code for control algorithms.

Undergraduate Research – Sharc Lab, Georgia Tech *Aug 2025 – Present*

- Researched FPGA acceleration and HLS automation in the ORS program; contributed to HLSFactory, enabling design-space expansion, cross-vendor synthesis (AMD,Xilinx Vivado, Intel), and AI-scale dataset curation for high-level chip design.
- HLSFactory has generated over 250 design variants, creating an AI-ready corpus that improved ML-based post-implementation QoR prediction accuracy by over 20% vs. vendor estimates.

Digital Design Engineer, SiliconJackets *Aug 2025 - Present*

- Designed a 64-bit calculator system in SystemVerilog RTL, building modules with FSM-based control, synchronous resets, generate constructs, memory-mapped I/O, and synthesizable coding practices.
- Performed functional verification using Cadence Xcelium/SimVision, validating SRAM read/write sequencing, 64-bit arithmetic operations, and state-machine behavior through waveform analysis and testbenches

Radio/RF Engineer, Robocup, RoboJackets *Aug 2024 – July 2025*

- Developed the RF board responsible for radio communication between robots**.**
- Finished 4th in Division B of the Small Size League in the world's largest Robotics and AI competition 'Robocup' in Brazil.

Projects

Four Channel Servo PWM Controller in VHDL (FPGA) *May 2025 – July 2025*

- Built a hardware PWM controller in VHDL that lets a soft-core processor drive four hobby servos with 1.4° resolution and 0 timing jitter fully autonomous on a DE10-Lite FPGA.

Missile Blaster – Arcade Shooter on ARM Mbed (C/C++) *May 2025 – August 2025*

- Developed an embedded arcade-style shooter on the ARM Mbed microcontroller platform in C/C++, interfacing with a color LCD for graphics, input controls, and audio peripherals to implement responsive gameplay features.

Independent Research on Graphene Supercapacitors and its efficiency over traditional EDLCs *June 2022 – December 2023*

- The Graphene Supercapacitor demonstrated a 40% higher energy density compared to an EDLC of the same parameters.
- Presented this research at a national science fair and won 1st place out of 3000 Students and 20+ schools.

PID line-following robot that doubled as a Bluetooth controlled Ps5 robot *Nov 2023-July 2024*

- Won first place at a robotics competition at Modern College out of 500+ students in schools & universities across Oman.
- Designed the robot chassis using CAD and used IR sensors for line-following and an HC05 module to control the robot using a Ps5 Controller through Bluetooth.

Leadership

President, Quiz Club *May 2020 – May 2024*

- Spearheaded recruitment of 140 members, a 30% increase and organized weekly quiz sessions for 140 members.