Aparna Balaji

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Education

University of Texas at Dallas — Richardson, TX
Bachelor of Science in Computer Science — *Expected Graduation: May 2029*

University of Ottawa — Ottawa, ON
Computer Science Coursework, Transferred to UT Dallas — *September 2025 – April 2026*

- GPA: 3.9/4.0 | Gooi Seong Chneh and Gooi Seong Gum Scholarship
- Relevant Coursework: Intro to Computing I + II, Calculus I, Linear Algebra I, Discrete Math for Computing, Digital Systems

Technical Skills

Programming Languages: Python, C++, Java, TypeScript, JavaScript, MATLAB

Frameworks and Tools: React, Next.js, Tailwind CSS, Payload CMS, Claude API, Git, GitHub, Vercel, Docker

Hardware and Embedded: Embedded C++ firmware, ESP32, Arduino, OV2640 camera module, MicroSD storage

Academic & Personal Projects

Market Trading Simulator | *Python* — *September 2026 – Present*

- Designed and built a systematic trading and backtesting engine from scratch in Python, including buy and sell logic, portfolio tracking, and realized versus unrealized profit and loss calculations.
- Implemented a walk-forward testing loop with a look-ahead guard to prevent data leakage, and coded momentum and mean-reversion trading strategies to test against historical data.
- Extending the engine into an agent-based market simulator, with learning agents in PyTorch.

Pet Adoption Bio Generator | *React, Claude API, Vercel* — *July 2026*

- Built and deployed a web application that generates written pet adoption bios for animal shelters by integrating the Claude API, designing and implementing both the React frontend and the backend independently.

IEEE uOttawa Student Branch Website | *Next.js, React, Payload CMS, Vercel* — *November 2025 – May 2026*

- Built and deployed the branch website with the IEEE uOttawa software team, using a Kanban board and pull request reviews.
- Built reusable React components and integrated Payload CMS so officers can update the live site without editing code.

ESP32 Digital Camera and Embedded System | *ESP32, C++, Arduino, OV2640, MicroSD* — *February 2026 – Present*

- Built a custom digital camera from an ESP32, an OV2640 image sensor, and a MicroSD module that captures and saves photos.
- Developed the embedded C++ firmware that controls image capture and storage on the device.

Leadership

Comet Robotics, Corporate Projects — Richardson, TX
Embedded Team Lead, Janta Power Solar Tracker (Industry-Sponsored) — *September 2026 – Present*

- Manage 8 engineers across hardware and software subteams building a sun-position sensor for Janta Power solar towers.
- Designed the circuit schematic, selected the components, and built the bill of materials for a design that reads three photodiodes on an ESP32 and publishes sun-angle data to AWS S3.
- Own the timeline, budget, and design sign-offs against a November 30 deadline and report weekly to the company.

IEEE UT Dallas Engineering Branch — Richardson, TX
Project Supervisor — *September 2026 – Present*

- Manage a student team building an AI-powered skill gap analyzer in Python that uses an LLM API to extract skills from job postings as structured JSON and processes the results with pandas.
- Created mentorship opportunities within the project by pairing upper-year students with freshmen.

IEEE uOttawa Student Branch — Ottawa, ON
First Year Coordinator — *September 2025 – May 2026*

- Led *Bits, Bytes, and Breadboards*, a hands-on Arduino and circuitry workshop for around 75 first and second-year engineering students over two months of planning. It won the IEEE uOttawa Award for Premier Technical Event of the Year.
- Co-led a Git and GitHub workshop for first-year students. Elected VP Academic of the branch in April 2026 prior to transferring.

Work Experience

iCode — McKinney, TX
Instructor — *February 2024 – October 2024*

- Instructed coding fundamentals to approximately 30 students per week, ages 5 to 12, in Scratch, Python, Roblox Studio, and animation software. Created over 5 reusable lesson plans that other instructors adopted.