Donavon Clay

(915) 474-7122 | dclay@mit.edu | donavon.clay21@gmail.com | linkedin.com/in/donavon-clay

Education

Massachusetts Institute of Technology — Cambridge, MA

Bachelor of Science in Electrical Engineering and Computer Science, GPA: 4.8/5.0 — *Sept. 2021 – May 2025*

- **Coursework:** Systems and Controls, Embedded Systems, Digital Systems Lab, Circuits, Algorithms, Differential Equations, Linear Algebra, Computer Architecture, Microcomputer Lab, Digital Fabrication
- **Organizations:** National Society of Black Engineers, Society of Hispanic Professional Engineers, Undergraduate Student Advisory Group in EECS, Club Volleyball, Eta Kappa Nu (IEEE-HKN), Zeta Psi

Imperial College London — London, UK

Visiting Student in Department of Electrical and Electronics Engineering — *Sept. 2023 – Mar. 2024*

- **Coursework:** Biomedical Electronics, Digital Signal Processing, Human-Centered Robotics, Adv. Computer Architecture, Intro to Machine Learning, Computer Vision and Pattern Recognition, Machine Learning for Imaging

Experience

Queen's University Belfast, Institute of Electronics, Communications and IT — Belfast, NI

Visiting Scholar — *June 2025 – Sept. 2025*

- Hardware implementation and acceleration of a TPG classifier for real-time retinomorphic signal processing on a Zynq 7000 series chip using Vitis HLS and Vivado Design Suite.

MIT Research Laboratory of Electronics, Lewis Neuro Lab — Cambridge, MA

Undergraduate Researcher — *Sept. 2024 – Jan. 2025*

- Worked on an open-sourced EEG headband system with closed-loop auditory stimulation for home-based neuromodulation sleep studies.

Cisco Meraki — New York City, NY

Firmware Intern — *June 2024 – Aug. 2024*

- Enhanced a network path monitoring tool using C++ to support feature development for multiple teams
- Delivered rapid bug fixes for critical customer deals and increased test coverage with new unit and integration tests (C++ and Python)

Slack — San Francisco, CA

Software Engineering Intern - Data Engineering — *June 2023 – Aug. 2023*

- Developed SQL queries to populate a dashboard visualizing data pipeline performance, enabling proactive management for engineering teams
- Automated data extraction and ingestion by querying a RESTful API using Python and SQL, processing JSON data, and scheduling tasks with Apache Airflow into an S3-based data warehouse

Projects

6.900 MIT Remote Weather Monitoring System | *C++, Python, PCB Design*

- In a team of 8, designed five low-cost, remote weather monitoring system units for identifying urban heat island hot spots on MIT's campus. Technologies included: temp/rh sensing, theft detection, LoRa comms, e-ink display
- Led sensors sub-team, crafting specs/testing plans, designing PCBs, and developing firmware. Assisted in system integration and industrial design.

Physical MBTA Train Tracker | *C++, Manual and Digital Fabrication*

- Engineered a 2-D timing-belt gantry using NEMA stepper motors and custom 3D-printed mounts to position magnetized train icons over a laser-engraved wooden map of Cambridge.
- Developed ESP32 firmware to query the MBTA API, translate live vehicle positions into motor commands, and actuate both steppers and electromagnet for real-time icon updates.

2.00b Super-Sync: A 2v2 Reaction-Based Teamwork Game! | *C++, Arduino*

- In a team of five, conceptualized and play-tested three game ideas (including Super-Sync) as low-tech prototypes at the Discovery Museum, gathering feedback from children on mechanics and engagement.
- Designed and built the final electronics prototype: Arduino Nano wristbands containing reed switches + wireless modules paired with a central Arduino Uno tower, debugged circuits, and livestreamed the full demo to hundreds.

PID Controlled Self-Balancing Ball | *C++, Arduino*

- Designed and implemented a self-balancing ball system on a one-axis rotational platform using an ultrasonic distance sensor, servo motor, and ESP32 controller.
- Programmed the control system in C++ using Arduino IDE, optimizing PID parameters (Kp, Ki, Kd) through experimental testing

6.08 Smart Dungeons and Dragons | *C++, Arduino*

- Collaborated in a team of 4 to create an interactive Dungeons & Dragons game with IoT devices
- Programmed an ESP32 module in the Arduino IDE using C and interfaced with LED matrices, microphones, and accelerometers to simulate dice rolling, movement, and environmental cues

6.205 Digital Systems Lab Final Project | *SystemVerilog*

- Developed a real-time Fruit Ninja game on a Xilinx FPGA using SystemVerilog, interfaced with a camera board, implementing motion tracking with a convolution matrix for real-time image processing and displaying via VGA.

Teaching and Mentoring Experience

MIT Department of Electrical Engineering and Computer Science — Cambridge, MA

Lab Assistant - 6.200 Circuits; 6.190 C & Assembly; 6.100 Intro to CS with Python — *Feb. 2023 – May 2025*

- Supported student learning in core theory concepts such as nodal analysis, op-amps, filters, pointers, stack management, DP; facilitated hands-on labs (e.g., DACs, bass boosters, snake game), assisting students in debugging.

MIT Department of Physics — Cambridge, MA

Undergraduate Teaching Assistant - 8.02 Electricity & Magnetism — *Feb. 2022 – May 2023*

- Assisted in teaching students concepts of electricity and magnetism through daily instruction, weekly office hours, setup of experiments, and feedback on weekly problem sets

Hispanic Scholarship Fund — Los Angeles, CA

National Leadership Conference Mentor — *Aug. 2024 – Aug. 2025*

- 2x mentor a group of 6 students from 100 selected high-potential Latino college sophomores, conducting resume reviews, offering academic and career advice, and facilitating networking with sponsors over a 4-day period

MIT Office of the First Year — Cambridge, MA

Orientation Leader — *Aug. 2024*

- Responsible for orienting a group of 12 first-year students to campus, encouraging group participation and interaction

Associate Advisor — *Sept. 2022 – May 2025*

- Assisted senior faculty in advising 6-8 first-year students each year on course planning, study strategies, and navigating university resources; Selected to a 7 person committee for developing future advising curriculum.

Skills & Interests

Programming Languages: Python, C, C++, SystemVerilog, Assembly (RISC-V & Intel 8051), SQL, R
Tools and Skills: Git, Inventor, Fusion, KiCAD, MATLAB, PyTorch, Vivado, Vitis, ROS, PowerPoint, PSoC Creator
Equipment: Soldering, Oscilloscopes, Multimeters, Drill Press, Band Saw, Laser Cutter, 3D Printer
Languages: English (native), Spanish (intermediate)
Hobbies/Interests: Volleyball, Basketball, Bouldering, Languages, Parks, Teaching, Public Transit