Justinas Petkauskas

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Education

Massachusetts Institute of Technology — Cambridge, Massachusetts
B.S. in Electrical Engineering with Computing (Course 6-5) — *Expected May 2030*

- **Coursework** (Fall 2026): Low-level C and Assembly, Theoretical E&M, Proof-based Multivariable Calculus

Collegiate School — Richmond, Virginia
Valedictorian · GPA: 4.52/4.00 — *May 2026*

- **Coursework:** Linear Algebra, Multivariable Calculus, AP Calculus BC, AP Computer Science A, AP Physics C
- **ACT:** 36/36

Experience

Research Assistant — September 2026 – Present
MIT Media Lab, Responsive Environments Group — *Cambridge, Massachusetts*

- Working under Professor Joseph Paradiso to build distributed sensor networks for environmental research
- Taking full ownership over PCB board revision and firmware architecture of field-deployed sensing systems

Electronics Content Creator — January 2026 – August 2026
YouTube, PCBWay — *Remote*

- Designing novel electronics projects; writing firmware, designing hardware/electronics, and fabricating parts
- Secured YouTube channel sponsorship with PCBWay
- Reached 15,000+ viewers and 250K+ impressions over 8 videos

FRC Subsystem Lead, Data/Strategy Lead — January 2022 – May 2026
FIRST Robotics Competition Team TORCH 5804 — *Collegiate School, Richmond, Virginia*

- Owned full design and build cycle for 2026 climbing mechanism, from concept through competition
- Leveraged Fusion to design and validate robust flip climb system which transmits 400Nm torques
- Designed Tableau data visualizations at competitions to generate redundant picklists before alliance selection

Projects

Semi-wireless Quiz Bowl Buzzers | *ESP32, ESP-IDF, FreeRTOS* — May 2026

- Built custom quiz bowl buzzer system including PCB, firmware, and enclosure to simplify setup and gameplay
- Custom ESP-NOW protocol reaches 50 microsecond minimum buzz arbitration resolution
- Native hosted web server enables local quizbowl packet parsing and game management

BenchyNet | *TensorFlow, TFLite Micro* — August 2025

- Prototyping client-side GCode recognition model executing on 3D Printer using PointNet Neural Net architecture
- Scraped and cleaned hundreds of 3DBenchy models to fit, optimized extensively to execute on embedded

Classical MP3 Player | *ESP32, Platform IO, KiCAD, FreeCAD* — April 2025

- Built full-custom ESP32-S3 MP3 player: four-layer PCB, 3D-printed enclosure, and full firmware stack
- Debugged across three PCB revisions; integrated PCM5102 DAC, MAX1811 BMS, and mechanical clickwheel
- Implemented custom SQLite schema organizing classical music by composer, conductor, and ensemble
- Reached 2,000 YouTube viewers and 23 GitHub stars

Skills & Awards

Languages: C, C++, Java, Python
Frameworks & Tools: PlatformIO, ESP-IDF, FreeRTOS, Arduino IDE, TensorFlow
Hardware & EE: Fusion, SOLIDWORKS, KiCAD, microsoldering, debugging, 3D printing, CNC machining
Awards: Hackaday Featured, US Presidential Scholar Nominee, Speech and Debate Academic All American
Qualifications: MIT AI Alignment AI Safety Fellow