

Nijat Taghizade

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Objective

Enthusiastic first year Electrical Engineering student with prior experience in programming in both high-level and low-level programming languages, machine learning systems, 3D Design software, microcontroller architecture and PCB design, seeking experience in the industry.

Education

Georgia Institute of Technology | Atlanta, GA

Bachelor of Science in Electrical Engineering, GPA: 4.00

Expected Graduation, May 2028

Skills

Programming: Python, C++, Java, SQL

Hardware: Raspberry Pi, FPGAs (Verilog/SystemVerilog), PCB Design (KiCad)

Software: MATLAB, Fusion 360, AutoCAD, React, VSCode, Jupyter

Communication: Design proposals, Technical reports, instruction manuals, Presentations, Research Papers

Languages: English (Fluent), German (Fluent), Russian (Conversational), Turkish (Conversational), Azerbaijani (Native)

Experience

Georgia Institute of Technology | Atlanta, Georgia

September 2025 – Present

Undergraduate Research / Biomedical Microsystems Laboratory

- Designed a motor-driven system to automate cell mixing inside a bioreactor, replacing manual rotation and tilt routines with programmable motion profiles.
- Prototyped firmware for timed rotations and tilt sequences for operator time reduction and boosted efficiency.

Cambridge University | Cambridge, UK

February 2025 – May 2025

Research Student / Computer Science and Bioinformatics

- Conducted research in machine learning for fault detection within three-phase electrical transmission systems, achieved **99%** accuracy on integrated models.
- Integrated transformer and line parameters as model features to improve detection precision, the model demonstrated annual energy savings of approximately 500 megajoules and an ROC AUC of 0.99.
- Built a MATLAB Simulink Model of 3-phase electrical transmission system with step-up and step-down transformers to simulate transmission behavior under normal and faulty operating conditions
- Designed and ran simulations to generate multiple fault scenarios in three-phase transmission lines, constructing an augmented dataset for error detection.

Projects

Analog Power Monitoring PCB | Personal Project

March 2026

- Designed and simulated a custom PCB-based power monitoring system capable of measuring 0-24V and 0-5A, using a precision voltage divider and shunt-based current sensing; achieved roughly 5.3 mV voltage resolution and 1.6 mA current resolution through a 12-bit ADC (Analog-to-Digital) interface.
- Developed a Python-Based modeling pipeline to generate transfer characteristics, ADC response curves, and a full 0-100 W power map, validating linearity, sensitivity, and signal conditioning performance for integration with real-time monitoring.

64-Bit Adder Physical Design | Academic Project

February 2026

- Built and debugged a SystemVerilog + Tcl RTL-to-GDSII flow for a 64-bit adder/top-level datapath using Cadence Genus, Innovus and Tempus, covering synthesis through signoff timing analysis.
- Evaluated implementation results for a 3524-instance design with 286k μm^2 area, and 69.3% density, and improved setup WNS by 0.375 ns across flow iterations.

Relevant Coursework

Calculus 1-3, Linear Algebra: Linear approximation/Taylor methods, multiple integration, and vector calculus (Green/Gauss/Stokes), matrices and linear systems, eigenvalues/eigenvectors

Signal Processing: Discrete-time signals and linear systems: sampling, filtering, frequency response, DFT, and Z-transform, with MATLAB-based lab work

Digital System Design: Logic gates/switches, Boolean algebra, number systems/arithmetic, storage elements, and intro datapath/memory/ISA concepts

Physics: Calculus-based mechanics with lab; motion and forces, work/energy, momentum, rotation/statics, plus oscillations and waves topics