

Samuel Bloom

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Education

Franklin W. Olin College of Engineering <i>Electrical and Computer Engineering (B.S), Recipient of merit-based Olin Tuition Scholarship</i>	Needham, Massachusetts 2024–2028
Coursework: Discrete Mathematics, Microelectronic Circuits, Software Systems, Engineering Systems Analysis: Signals, Quantitative Engineering Analysis 1-3 (Linear Algebra, Differential Equations, DFT + FFT), Software Design.	

Experience

Weed identification Programmer + Robotics Researcher <i>Artificial Intelligence in Robotics Lab (Olin College)</i>	Needham, Massachusetts SEP 2024–OCT 2025
<ul style="list-style-type: none">Used Python, Open3D, and ROS 2 Humble to develop a real-time point cloud for weed identification purposes.Used Robotics-based solutions (Farming Robots) to compete in the Farm Robotics Competition (FRC).Used knowledge of camera and sensor implementation to move our robot in relation to real-world feedback.	
Software Design, Course Assistant <i>Software Design Teaching Team (Olin College)</i>	Needham, Massachusetts JAN 2026–PRESENT
<ul style="list-style-type: none">Supported instruction for 80+ students in an intermediate Python course, emphasizing good coding practice.Led weekly office hours and 1:1 tutoring to debug Python projects and assist in conceptual understanding.Reviewed and provided structured feedback on GitHub-based assignments, focusing on architecture and modularity.	
Project Development and Management Intern <i>Microsoft</i>	Redmond, Washington OCT 2023–JUN 2024
<ul style="list-style-type: none">Contributed to Windows-related project development through iterative planning, execution, and refinement.Supported the full project lifecycle by applying structured project management practices to track milestones.Implemented continuous improvement processes to refine workflows, incorporate feedback, and improve projects.	
Electromechanical Development Engineer <i>Public Interest in Technology Team (PInT)</i>	Needham, Massachusetts SEP 2024–OCT 2025
<ul style="list-style-type: none">Utilized information from sensors—TDS contents, PH levels, Light, Temperature—to instruct autonomous caring.Used best prototyping, electrical, and mechanical practices to develop multiple hydroponic systems (shelves, carts).Developed a portable hydroponic system and course for elementary students to learn about hydroponic systems.	

Projects

Sync-Drive—Client/Server File Transfer over TCP	OCT 2025–DEC 2025
<ul style="list-style-type: none">Developed a low-level networking tool in C enabling reliable file transfer using TCP/UDP sockets with Client/Server.Implemented compressed transmission supporting both IPv4 and IPv6 addressing for cross-network compatibility.Managed the project with CMake build configuration and supported a variety of file types (PDFs, GIFs, etc.).	
PCB Planarity Analysis—Graph Theory, PCB Routing, Planarity Testing	OCT 2025–NOV 2025
<ul style="list-style-type: none">Modeled printed circuit board trace layouts as graphs and analyzed routing feasibility given planarity/components.Implemented planarity testing and routing analysis algorithms to identify valid PCB configurations (non-K3,3).Used computational analysis and visualization to evaluate design tradeoffs and inform PCB layout strategies.	
GNN Point Cloud Segmentation—Neural Networks, Point Clouds/LIDAR	NOV 2025–DEC 2025
<ul style="list-style-type: none">Modeled 3D point cloud data as graphs to capture spatial and neighborhood relationships for segmentation tasks.Implemented graph neural network architectures to learn geometric features and classify point-level structures.Evaluated model performance using machine learning metrics to assess segmentation accuracy and training.	
ASCII Shader—Real-Time Rendering, Edge Detection, C#/Unity	NOV 2024–PRESENT
<ul style="list-style-type: none">Developed a real-time ASCII shader in C# and Unity, converting visual input into character-based representations.Implemented edge detection using Gaussian blurring and gradient filtering to extract image features for mapping.Optimized shader performance and visual clarity, enabling smooth updates and high-fidelity ASCII rendering.	

Skills

Electrical: KICAD, Circuit Design + Analysis, Schematic Proficiency, Soldering, PCB Development, Oscilloscope
Programming: C, C++, C#, Java, Python (Pandas), Git/Terminal/Bash, Data Structures+Algorithms, ML, MATLAB
Embedded/Hardware: Arduino, Raspberry Pi, Microcontrollers, Sensors, Signal Processing, Motor Integration.