

Bera Yavuz

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EDUCATION

Bachelor of Applied Science in Nanotechnology Engineering <i>University of Waterloo, Faculty of Engineering — Cumulative GPA: 3.95 / 4.00</i>	Sept 2023 – Apr 2028 Waterloo, ON
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SKILLS

Programming & Data: MATLAB, Python, serial communication, image & spectral analysis

Engineering Tools: SolidWorks, Inventor, Fusion 360, Onshape, Blender, Excel

Optics & Photonics: Optical system design, laser alignment, lenses, mirrors, dichroics, spectroscopy

Laboratory & Fabrication: XRD, ellipsometry, wet lab techniques, 3D printing, mill, bandsaw, drill press, CNC

EXPERIENCE

Mechanical R&D Intern <i>Irradiant Technologies</i>	Jan 2026 – Apr 2026 Greater Boston, MA
– Designed and fabricated vibration-isolated optical enclosures, reducing noise and improving measurement stability	
– Enabled an SPIE photonics west publication by CAD-modeling and Rendered a two-photon lithography optical setup	
– Designed and CNC-machined a custom vacuum chuck to fixture proprietary scaffold materials for precision slicing.	
Photolithography R&D Intern <i>Irradiant Technologies</i>	Sept 2025 – Dec 2025 Greater Boston, MA
– Optimized photolithography exposure processes, improving resist performance and print uniformity	
– Designed and manufactured mechanical components for printing and post-processing systems	
– Developed software for 3-axis stage characterization, improving lithography alignment accuracy	
Quantum Photonics R&D Assistant <i>Institute for Quantum Computing (IQC)</i>	Jan 2025 – Apr 2025 Waterloo, ON
– Built custom optical assemblies for laser locking using DAVLL techniques	
– Designed and 3D-printed fiber routing and amplifier mounts for complex optical setups	
– Automated fine-structure splitting analysis using single-photon counting instrumentation	
Quantum Photonics R&D Assistant <i>Institute for Quantum Computing (IQC)</i>	May 2024 – Aug 2024 Waterloo, ON
– Developed MATLAB algorithms to detect nanostructures in experimental imaging data	
– Automated experimental control via serial communication with piezo stages, lasers, and spectrometers	
– Increased experimental throughput by 300×, enabling analysis of 174 quantum dots per hour	

PROJECTS

NWQD Operating App — Quantum Dot Control System	May 2024 – Apr 2025
– Developed MATLAB application for controlling nanowire quantum dot experiments	
– Authored system documentation and calibration procedures	
Triboelectric Nanogenerator	Nov 2023 – Dec 2023
– Designed and built wind-powered triboelectric generator using reclaimed materials	
– Achieved 1 V electrical output via triboelectric charge separation	

PUBLICATIONS

A Low-Cost, Open-Access Two-Photon Lithography Tool	Jan 19th, 2026
– SPIE Photonics West - (Paper 13899-11)	
Finding the Perfect Quantum Dot for a Quantum Repeater	Jul 18th, 2025
– SPIE Photonics for Quantum - Proceedings Volume 13563, Photonics for Quantum 2025; 1356305 (2025) https://doi.org/10.1117/12.3063250	

AWARDS

Paul B. Spafford Entrance Scholarship	June 2023
– Awarded to two outstanding first-year Nanotechnology Engineering students	
Stanford Fleming Foundation Re-Engineering Award (2nd Place)	Nov 2024
– Recognized for innovative functional enhancements to existing technology	