

JUSTIN LEE

Stony Brook, NY | (516) 423-5947 | justin.lee.14@stonybrook.edu
linkedin.com/in/justinj6lee

EDUCATION

Stony Brook University | Stony Brook, NY

Expected May 2029

Intended Electrical Engineering Major | Honors College

Coursework by Summer 2027: Electrical Circuit Analysis; Signals and Systems

TECHNICAL SKILLS

Circuit Design and Hardware: Analog circuits, laser drivers, transimpedance amplifiers, PCB layout, Cadence Allegro, impedance matching, differential-pair routing

Testing and Debugging: Oscilloscopes, multimeters, optical/electrical characterization, eye diagrams, bit error rate (BER), signal-to-noise ratio (SNR), instrumentation troubleshooting

Programming and Analysis: Python, C++, MATLAB, Excel; data analysis, Bayesian black-box optimization

Semiconductors and Photonics: Device physics, III-V-Sb avalanche photodiodes, carrier transport

Technical Documentation: Experimental methods and results, scientific writing (Optica Open preprint)

RESEARCH EXPERIENCE

Stony Brook University | Optoelectronics Group

Research Assistant

August 2026 - Present

- Study III-V-Sb avalanche photodiodes for infrared (IR) detection using separate absorption and multiplication regions, supporting ongoing research into photodetector performance.
- Analyze InAsSb absorber and AlGaAsSb multiplication layers in order to understand how heterostructure design influences carrier transport, impact ionization, and avalanche gain.

Brookhaven National Laboratory | Instrumentation

Research Intern

June - August 2025

- Engineered a laser-alignment system by integrating optical components, mechanical adjustment, and electronic controls, creating a platform for aligning beams into the core of an optical fiber.
- Applied Bayesian black-box optimization for automating the search for laser-coupling configurations in a motorized opto-mechanical system.
- Evaluated system performance and troubleshoot optical alignment and instrumentation; documented alignment and optimization work in an Optica Open preprint.

ENGINEERING PROJECTS

Optical Transceiver | Independent Hardware Project

April - August 2026

- Designed and assembled laser driver and transimpedance amplifier circuitry, progressing from circuit design to prototype testing and measurement.
- Characterized electro-optic performance using eye diagrams, BER and SNR measurements.
- Overcame high-frequency signal-integrity constraints through impedance matching and differential-pair routing incorporated into the PCB layout.

PREPRINT

Lee, Justin. "Black-Box Optimization Method in a Motorized Optomechatronic System for Light Detection and Alignment." *Optica Open*, 2025. Preprint.

doi.org/10.1364/opticaopen.30349630.v2

ADDITIONAL EXPERIENCE

JEI Learning Center | Math Teacher

January - June 2025

- Adapted math instruction for students in grades 3-8 with varied learning needs, helping improve grades by 20 points.