Raymond Lee

Instrumentation and Research Engineer

atomic sensing · experimental controls · test systems

Austin, TX area

rayjaelee@gmail.com · +1 (206) 715-2953 · linkedin.com/in/rayjaelee

Research engineer with hands-on experience building scientific instrumentation, data-acquisition software, and experimental controls for atomic magnetometers and trapped-ion systems. Uses LabVIEW, Python, and NI-DAQ to operate instruments, analyze data, and support precision measurements. Co-author of peer-reviewed work in through-barrier electromagnetic-induction imaging and Doppler cooling. Targeting instrumentation, test, and research-engineering roles in aerospace, defense, sensing, and related R&D.

TECHNICAL SKILLS

- **Programming:** Python, C++, Java, JavaScript, HTML/CSS, SQL
- **Scientific computing / DAQ / controls:** LabVIEW, NI-DAQ / nidaq API, Git, VS Code, LaTeX
- **Instrumentation & characterization:** Atomic magnetometers, laser spectroscopy, SEM, XRD, QENS; instrument-control GUIs

TECHNICAL AND RESEARCH EXPERIENCE

University College London — Laser Cooling Laboratory London, United Kingdom

Voluntary post-M.S. research, atomic-magnetometer EMI imaging *October 2023 – June 2024*

- Continued electromagnetic-induction imaging (EMI) research with atomic magnetometers, including implementation of a two-photon transition intended to improve the sensitivity of portable sensors used for sub-millimeter detection.
- Co-authored peer-reviewed work in *IEEE Transactions on Instrumentation and Measurement* (2025) on through-barrier sub-mm EMI imaging and sensor performance.

M.S. thesis research, atomic-magnetometer EMI imaging October 2022 – September 2023

- Designed and refined experimental setups for high-precision measurements with atomic magnetometers under Prof. Ferruccio Renzoni.
- Used LabVIEW for instrument control and Python to build diagnostic, calibration, analysis, and visualization tools for EMI imaging systems.

University of Washington — Trapped Ion Quantum Computing Laboratory Seattle, WA

Undergraduate researcher *January 2020 – August 2021*

- Developed a Python program with a GUI that connected laboratory instruments through NI-DAQ / the nidaq API for real-time control, and wrote software to simulate custom Paul traps and model ion behavior.
- Built and calibrated ion-trapping apparatus and implemented two-tone Doppler cooling to stabilize Coulomb crystals and improve measurement reliability.
- Co-authored a *Physical Review A* paper (2022) on two-tone Doppler cooling of radial two-dimensional ion crystals.

University of Washington — QENS Research Group Seattle, WA

Undergraduate researcher, materials characterization *August 2019 – June 2020*

- Performed materials characterization using XRD, SEM, and quasi-elastic neutron scattering (QENS) to analyze proton dynamics and structural behavior in crystal lattices.
- Delivered technical presentations synthesizing results for cross-functional research collaborators.

PUBLICATIONS

- H. Yao, N. Yin, **R. Lee**, G. Liu, and F. Renzoni, "Through-Barrier Sub-mm Electromagnetic Induction Imaging With Atomic Magnetometers," *IEEE Transactions on Instrumentation and Measurement*, vol. 74, Art. no. 4506708, 2025.
- A. Kato, A. Goel, **R. Lee**, Z. Ye, S. Karki, J. J. Liu, A. Nomerotski, and B. B. Blinov, "Two-tone Doppler cooling of radial two-dimensional crystals in a radio-frequency ion trap," *Physical Review A*, vol. 105, no. 2, 023101, February 2022.

EDUCATION

University College London London, United Kingdom
M.S. in Quantum Technologies, 2022 – 2023
Relevant coursework: Advanced Quantum Theory; Atom and Photon Physics

University of Washington Seattle, WA
B.S. in Physics, 2017 – 2021
Relevant coursework: Laser Physics; Contemporary Atomic Physics; Quantum Mechanics I/II

Texas State University San Marcos, TX
B.S., dual major in Mechanical Engineering and Computer Science, 2025 – Present (in progress; expected 2028)

ADDITIONAL EXPERIENCE

Lowe's of Georgetown — Fulfillment Associate January 2026 – Present
Georgetown, TX

- Execute high-volume digital order fulfillment for online and professional customers, using inventory systems to locate, verify, and stage merchandise and to resolve real-time stock discrepancies.
- Support Buy Online, Pick Up In-Store (BOPIS) workflows and safe material handling for orders ranging from small parcels to heavy building materials.

Choi Jewelry — Watch Repair Technician November 2024 – March 2025
Virginia Beach, VA

- Provided technical consultations for premium brands (Seiko, Citizen, G-Shock).
- Streamlined intake workflows for 500+ monthly repair requests to improve turnaround time while maintaining quality and customer satisfaction.

Juno Records — Despatch Assistant January 2024 – May 2024
London, United Kingdom

- Prepared and dispatched 1,000+ daily shipments, maintaining 100% adherence to domestic and international delivery deadlines.
- Conducted stock audits to identify and resolve inventory discrepancies.

Conibear – UW Student-Athlete Dining — Student Lead January 2021 – June 2021
Seattle, WA

- Supervised daily service operations for 300+ student-athletes, including high-speed delivery and adherence to nutritional and safety standards.
- Directed back-of-house logistics and equipment-maintenance protocols.

Bay Laurel Catering – UW Catering — Student Lead September 2018 – March 2020
Seattle, WA

- Led event logistics and service delivery for catering events of up to 500 attendees.
- Developed and implemented a standardized training program for 15+ new team members.

GoGet.my — Web Application Developer July 2018 – September 2018
Kuala Lumpur, Malaysia

- Built interactive web tools and data-driven dashboards using Python and JavaScript, integrating the Google Maps API for geospatial visualization.
- Improved application responsiveness via asynchronous data retrieval (AJAX) and MVC workflows.