Hunter Brodie

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Education

Northeastern University / *Boston, MA*   September 2021 - Present
- Candidate for Bachelor of Science degree in Computer Science and Physics   Expected May 2025
- GPA: 3.85/4.0
- Honors: Dean's List, Honors College
- Notable Courses: Quantum Computation and Quantum Information, Advanced Quantum Mechanics
- Activities: Northeastern Rock Climbing, Club Squash

University College Dublin / *Dublin, Ireland*   September 2024 - December 2024
- Semester Study Abroad Program
- Notable Courses: High Energy Particle Physics, Algebraic Structures
- Activities: Mountaineering Club

Skills

Languages
- Rust (PyO3, Actix-Web, Reqwest), Python (NumPy, SciPy), LaTeX, C#, Java, C++

Research Experience

Block Correlated Coupled Cluster Research   March 2024 - Present
- Done under Professor Feiguin at Northeastern University
- Came up with an efficient algorithm to generate all the necessary Ferrers diagrams
- Implemented the algorithm in a Rust library with Python bindings in order to take advantage of Rust's
  speed with Python's ecosystem

Numerical Simulation of the Hydrogen Molecule   April 2024 - July 2024
- Done under Professor Feiguin at Northeastern University
- Reproduced "Numerical Solution of the Two-Electron Schrodinger Equation" by Winter et. al.
- Attempted to extend the paper using the hydrogen molecule to simulate the ground state energy
- Experimented with novel coordinate systems to extend the same mathematical tricks used to reduce the
  parameters

Work Experience

Bionet Sonar / *Intern*   January 2023 - Present
- Designed and implemented BlueTooth handshaking over ultrasonic connections
- Designed and implemented a wakeup circuit to allow a sleep mode in our underwater modems
- Designed high pressure aluminum cases for underwater modems
- Automated modem demos for presentations to new and potential partners
- Redesigned and updated the HydroNet website

Presentations

Northeastern University / *Boston, MA*   November 2023
- "An Overview of the BB84 and E91 Quantum Key Distribution Protocols"

Northeastern University / *Boston, MA*   April 2024
- "Numerical Solution of the Two-Electron Schrodinger Equation"