Nic Bolton

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EDUCATION

Honours Bachelor of Science in Physics and Computer Science Sep 2020 – Apr 2025
University of Windsor, Windsor, ON

- Minor in mathematics

AWARDS

Dean's List 2021 – Present

- Awarded annually to students with averages greater than 80%

Dean's Renewable Entrance Scholarship 2020 – 2023

- $10,000 over 8 semesters while maintaining an average greater than 85%

RESEARCH EXPERIENCE

Research Assistant | Wayne State University, Detroit, MI May 2022 – Present

- Developed program CISSCO with Java and C++ to quantify magnetic moments of microbleeds, supervised by Dr. Yu-Chung Cheng
- Implemented various algorithms that include solving field distributions, microbleed sizes, and quantifying noise
- Currently benchmarking CISSCO against similar programs, with the intention of incorporating findings in an upcoming academic paper

Research Assistant | University of Windsor, Windsor, ON May 2024 – Aug 2024

- Explored theoretical High-Harmonic Generation in crystals using computational modelling and numerical methods, supervised by Dr. Jeff Rau and Dr. Chitra Rangan
- Generated datasets based on physical models and computationally solved the time-dependent Schrödinger equation using Python in Jupyter Notebooks

Research Assistant | University of Windsor, Windsor, ON Dec 2022 – Apr 2024

- Contributed to Python code employing Principal Component Analysis and Neural Networks to identify elements from bacterial spectra, supervised by Dr. Steven Rehse
- Achieved an 83% reduction in program runtime through data preprocessing optimization
- Created user-friendly application for lab partners to find optimal code parameters for different datasets

PROFESSIONAL EXPERIENCE

Data Analyst | LFX Property Management, Lakeshore, ON May 2023 – Present

- Devised a component-based model using company pricing data to establish software requirements specifications
- Engineered an interactive map component through a REST API using Python to visualize company sites
- Maintained and contributed to full-stack applications built with .NET Framework and PostgreSQL

Teaching Assistant | University of Windsor, Windsor, ON Sep 2022 – Present

- Instructed and graded weekly labs (Introductory Physics I/II)
- Assisted students with assignments and learning C++ techniques (Advanced Object Oriented System Design Using C++)

Freelance Web Development | Self-employed, Windsor, ON Sep 2023 – Aug 2024

- Constructed various web sites and applications for local companies using .NET Blazor
- Collaborated dierctly with company representatives to identify design requirements
- Delivered websites that reached up to 800 impressions

PROJECTS

Bolton Cup boltoncup.ca

- Organized hockey tournament with 60+ players and multiple sponsorships, reaching 2000+ users on social media
- Built web app for viewing game results and player statistics, along with streamlining player registration
- Created desktop application for scorekeepers to update tournament database with each game
- Tools: C#, .NET, SQL, Stripe

Exo Explorer bolst.github.io/ExoExplorer

- Web application to visualize characterizable exoplanets found in the NASA Exoplanet Archive
- Project constructed over two days for the NASA Space Apps Challenge, placed third out of fifteen teams
- Tools: Three.js, Python, Bootstrap

Classical Simulation of a Quantum Algorithm for Breaking the Factoring Problem

- Developing capstone project involving quantum computing and cryptography, supervised by Dr. Shaoquan Jiang
- Project involves a classical implementation of Shor's algorithm to demonstrate how it can break cryptosystems such as RSA and EIGamal

POSTERS

- Rehse S et al., **Bolton N**, (Rehse Lab). *Detection of Bacteria in Blood using Laser-Induced Breakdown Spectroscopy*. 2024 CAP Congress, Western University, London, ON. May 2024
- Rehse S et al., **Bolton N**, (Rehse Lab). *Diagnosing Bacterial Urinary Tract Infections Using Laser-Induced Breakdown Spectroscopy*. 2024 CAP Congress, Western University, London, ON. May 2024
- Rehse S et al., **Bolton N**, (Rehse Lab). *Toward the development of a rapid diagnostic test for bacterial meningitis using laser-induced breakdown spectroscopy*. 2024 CAP Congress, Western University, London, ON. May 2024

TECHNICAL SKILLS

- **Programming Languages:** C, C++, C#, Java, Python, SQL
- **Frameworks/Libraries:** .NET, Flask, Matplotlib, Numba, NumPy, Pandas, SciPy
- **Technologies:** Azure, Docker, Excel, Git, Jupyter, PostgreSQL, Postman, Supabase, Visual Studio

EXTRACURRICULARS

Lakeshore Canadiens Jr. C Hockey Team Nov 2022 - May 2024

- Committed approximately 25 hours per week to practices, games, and travel while maintaining full course load
- Awarded Playoff MVP (2023) and currently hold the PJHL record for most saves in a single game (96)
- 2024 Schmalz Cup champions