Clarke Needles

clarke.needles@queensu.ca | (416)-908-7288 | GitHub | LinkedIn | Website

EDUCATION

Queen's University **Kingston, ON**
Bachelor of Applied Science, Computer Engineering (3.5 GPA) *2023 – Present*

- **Areas of Interest**: Embedded systems development and UI design.
- **Related Coursework:** Computer science, computer architecture, data structures and algorithms, mathematics, engineering design projects**.**

PROFESSIONAL EXPERIENCE

FUJIFILM VisualSonics **Toronto, ON**
Quality Assurance Engineering Intern *May 2024 – August 2024*

- C# to automate manual UI system tests through unit testing.
- Automated 4 system validation procedures and 300+ test cases (~12,000+ lines of code).
- Personally increased overall system test coverage by 8%.
- Working with a large team, large codebase, enterprise tools, agile methodology.

Software Engineering Intern *May 2025 – August 2025*

- C and C++ to work with the WinAPI for the system apps. Working with ATL and COM objects.
- Developed a TreeView file navigator panel using the MVP pattern.
- Improved service team productivity through new file navigator feature.
- Contributed ~16,000+ lines of code across the main code base, reviewed and approved by senior developers.

PERSONAL EXPERIENCE

Individual Projects

- **Data Structures Project —** coded entirely in C. Linked lists, trees, graphs, and more. Complex algorithms such as merge sort and Dijkstra's algorithm.
- **Fractals Generator —** C++ application using Windows API. Generate multiple fractals using multithreading, and SIMD instructions (SSE & AVX). Timing of generation methods to illustrate the effect of larger registers for computation speed.
- **Password Manager —** password manager coded in Java with encryption. UI made with Swing.
- **Sketchy Skies —** video game coded in python using Pygame.

Team Projects

- **Audio Gain Amplifier —** AC-DC power supply using a 10:1 transformer, full bridge rectifier, and voltage regulator. Power supply fed into the high current gain Darlington audio amplifier using BJT's.
- **Automated Fluid Dispenser —** using Arduino, IR sensor, peristaltic pump, motors, and SolidWorks to design a precise concentration-based fluid dispenser for medical applications.
- **Predicting and Visualizing Wildfires —** using various Python libraries (Pandas, NumPy, Seaborn, etc.) to interpret data with data frames and represent it visually using graphs and heat maps.
- **Machine Learning Project —** Python machine learning model to detect walking versus jumping.
- **Parcel Shield —** package safety system to combat against porch pirates. Using Arduino, MQTT broker, Flutter for web app, 3D printing, and external sensors.

ACTIVITES AND LEADERSHIP

Level 3 Baseball Umpire — *Ontario Baseball Association* *2020 – 2022*
Level 1 Snowboard Coach — *Georgian Peaks Ski Club* *2021 – 2022*
Baseball Instructor — *East York Baseball Camp* *2022 – 2023*
Canadian Computing Competition — *University of Waterloo* *2022 – 2023*
PicoCTF Hackathon — *Carnegie Mellon University* *2022 – 2023*
Canadian Baseball Nationals Representative — *Ontario Representative (East York Baseball)* *2024*
Men's Baseball — *Queen's University (2023 Canadian Baseball Guru Rookie of the Year)* *2023 – Present*
Queen's Esports Team — *Rocket League Team Member* *2024 – Present*

SKILLS

Programming: Python, Java, C, C++, C#, Git, Jenkins, Jira, SVN.
Technical: Data structures and algorithms, OOP, GUI's.
Workplace: Effective communication, problem solving, professionalism, teamwork.
Interests: Baseball, visual design, video editing, video game competitions and development, weightlifting.