MITCHELL TIMSON

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Website: mtimson.github.io/Portfolio

SUMMARY

Software developer with strong object-oriented programming abilities. Experience developing for large desktop applications in a professional environment, and many other areas in research and education environments. Interested in 3D graphics applications and gaming.

HIGHLIGHTED SKILLS

- Strong modern C++ skills
- QtQuick and QML UI framework
- Focused on performance
- Object-oriented programming in C++ and C#
- Strong mathematics background

EXPERIENCE

January 2017 - present

Senior Software Engineer, *Autodesk*

- Development in many areas of a large (~5 million lines of code) surface modelling application, including work on geometry algorithms, modelling tools, data serialization, data management tools, and user interface
- Fix bugs in 25+ year old legacy C code, as well as writing new features in modern C++ (14 and 17)
- Collaborate with developers in a globally distributed team
- Work on a project to implement a layered UI architecture with Qt/QML in a legacy application
- Work closely with designers when developing new features to deliver a quality user experience
- 2.5 years as git administrator for team of ~20 developers managing branching strategies for quarterly releases

March 2015 – July 2016

Software Developer/Research Assistant, *Nipissing University*

- Collaborated with faculty and students from other departments on a variety of multidisciplinary projects, including weather data and watershed analysis visualization applications, and programs used to perform psychology studies
- Performed requirements elicitation activities on multiple projects
- Managed multiple projects with different colleagues
- Co-authored papers on parallel computing for scientific journals

May 2008 – December 2017, seasonal

Asset Management Coordinator, *WSCS Consulting Inc.*

- Performing field visits to municipal sites in order to municipal asset information including roads, bridges, water, wastewater, buildings, parks and fleet
- Calculating values of assets utilizing Reed Construction data and historical records for 5 clients - values representing over $1billion in assets
- Analyzing records of asset purchases/maintenance and entering the required information into computer programs such as Microsoft Excel, Microsoft Access, and RSMeans
- Collaborated with senior level municipal officials, engineers, fire services in order to validate studies and asset valuations
- Created and populated MS Access database to capture client business information

EDUCATION

2016

Bachelor of Science, Honours, Computer Science, *Nipissing University*

- Certificate in Game Design and Development
- J.W. Trusler Proficiency Award in Computer Science
- Award in Robotics and Artificial Intelligence
- Undergraduate Research Conference 2016, Digital Humanities Panel winner

2014

Bachelor of Science, Honours, Physical Science, *University of Guelph*

Specializing in Physics

2007

Ontario Secondary School Diploma, *St. John Catholic High School*

Ontario Scholar

PROJECTS

Current

UI Modernization

- Replacing an in-house legacy C User Interface API with a modern C++ UI framework (Qt)
- Introduce a layered UI architecture to separate the UI layer from the tools and algorithms
- Required a significant refactor of a large application
- Complete rewrite of a large application's UI in QtQuick/QML
- Designed and implemented a QtQuick Tree View from scratch to support displaying all objects in a large scene (~10000+ entries) with high performance interactions
- The tree view is also designed to be reusable in any view and with different sets of interactions depending on the provided data
- Use object-oriented designs to connect the existing data model to the new UI in a minimally intrusive way

Further details, screenshots, and links for the following projects, as well as additional projects, available at https://mtimson.github.io/Portfolio/

2016 **Games Projects**

- Developed games with Unity3D and C#
- Collaborated to complete all development activities, including requirements gathering, documentation, and testing
- Partnered to program game logic with colleagues
- Designed and developed the user interface/HUD
- Created game AI to control the movement of autonomous agents to simulate interesting behaviours, such as flocking

2016 **GPU Programming**

- NSERC funded project to investigate parallel and heterogeneous computing
- Implemented complex optimization algorithms in C, utilizing the NVIDIA CUDA API for GPU programming, OpenMP for multi-core parallel programming, and BLAS and LAPACK libraries for linear algebra operations
- Designed and executed experiments to investigate the benefits of various heterogeneous parallel configurations
- Co-authored paper that is currently in review for IEEE Transactions on Parallel and Distributed Systems – the abstract is available on the portfolio page linked above

2015 – 2016 **Virtual Museum Exhibit**

- Developed a web-based application to be deployed as an exhibit commemorating the 100th anniversary of the Battle of Vimy Ridge at the Military Communications and Electronics Museum in Kingston, ON
- Employed a number of technologies throughout the development of main application, including JavaScript, HTML, CSS, and JavaScript libraries Cesium, Knockout, and jQuery
- Constructed tools using Python to allow client to easily populate the main application after development
- Created terrain meshes for application from maps using MATLAB

2014 – 2016 **Coursework**

- Gained experience programming in C, C++, C#, Java, JavaScript, MATLAB, Python, SQL, HTML, WebGL, and more
- Acquired skills with data structures such as trees, graphs, and finite state machines, their associated algorithms, and implementations
- Acquired strong mathematics skills in a variety of mathematics disciplines, including linear algebra, combinatorics, and number theory