

Jarrold MacKay

E-Mail = contact@jarroldmackay.ca

PROGRAMMING AND SOFTWARE

<u>Area</u>	<u>Experience</u>
Languages	C++(17/20), C#(7), Python(3.10), C, Rust, JavaScript
Game Engines	Frostbite, Unreal 4, Ignite, Bevy
Development	MS Visual Studio, Xcode, Beyond Compare, gcc/gdb
Profiling	PIX, Razor, RenderDoc
Rendering	OpenGL4, D3D11, Blender, LuxCore
Build/Automation	Jenkins, CMake, MSBuild, GitLab
Source Control	Perforce, Git, SVN
Data/Database	MySQL, FlatBuffers, XQuery, Redis
Analytics	MatLab, Pandas, Kibana/ElasticSearch, OpenCV

EXPERIENCE

Software Engineer II

Mar 2020 - Present @ Electronic Arts Inc.

Animation & Procedural

- Develop tools for intuitive editing of camera behaviour, animation clips, and physics/gameplay interactions
- Optimize UI and database usage for smooth user experiences
- Debug animation pipeline issues for deterministic asset importing and editing

Migration

- Refactor database and networking features for performance and testability
- Collaborate with game team engineers and managers to meet essential milestones
- Provide guidance and best practices on Frostbite engine use
- Generalize and merge common features back into engine code

Software Engineer II

Dec 2018 - Mar 2020 @ Skybox Labs

- Production development on Halo: Infinite
- Responsible for character AI and combat API maintenance
- Support and engagement with designers on gameplay features
- Review code to ensure it meets strict style guidelines
- Write technical documentation describing new implementations

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Math and Science Tutor

Jan 2019 - Aug 2021 @ Tutors On Call

- 1:1 instruction in secondary mathematics, physics, and chemistry
- Assess aptitude and needs for academic improvement
- Provide career insight in STEM fields

Software Engineer

May 2016 - Aug 2018 @ IUGO Mobile Entertainment Inc.

- Client/server RPCs and replication for real-time networking
- Lead the development of an entity-component gameplay architecture
- Custom Unreal 4 design script support

EDUCATION

Diploma of Visual and Game Programming

Oct 2014 - Apr 2016 @ The Art Institute of Vancouver

- Honour Roll designation
- Used D3D11/HLSL for techniques such as bump and normal texturing; render target postprocessing; billboard and toon shading
- Programmed a quadtree and sphere casting system for fast and reliable 2D collision detection

Bachelor's Degree of Science in Computing Science

Sep 2009 - Aug 2014 @ Faculty of Applied Science, Simon Fraser University

- Joint major in computing science and biochemistry with a minor in mathematics
- Completion of three co-op terms with excellent performance reviews
- Upper level coursework in algorithm analysis, bioinformatics, differential equations and database design
- Creation of a simulated annealing process for approximating TSP solutions

VOLUNTEERING

Math Mentor

Nov 2020 - Present @ Big Brothers Big Sisters of Greater Vancouver

- One-on-one remote mentoring for elementary children
- Informal lessons and games for building math confidence

PC Build and Test

Feb 2017 - Sep 2019 @ Free Geek Vancouver

- Test and sort hard drives, RAM, and other hardware components
- Assemble desktop computers for schools and social initiatives