

# Jacob McPeak

## Software Engineer

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### SKILLS

#### LANGUAGES

C / C++ / C#  
Javascript (NodeJS)  
SQL  
Python (Familiar)  
Lua (Familiar)

#### GAME NETWORKING TECH

Socket Programming  
Latency/Bandwidth Profiling  
UDP and TCP  
State Replication  
Client/Server Topology  
Custom Reliability Layers  
Client Side Optimism

#### TOOLS

Visual Studio  
CMake  
Memory Debuggers  
Doxygen  
Perforce and Git  
MSVC, GNU, Clang  
Azure and AWS

#### Misc.

Unity3D and custom C++ engines  
Object Oriented Design  
Data Oriented Design  
Data Structures and Algorithm Analysis  
Android SDK  
Linux operating systems (Ubuntu, Mint)  
Nintendo SDEV

#### LIBRARIES

WPF, ImGui, Qt  
Mono  
OpenGL  
GLFW3  
PhysX  
Racast/Detour

### PROJECTS

#### TECHNICAL LEAD AND NETWORK ENGINEER (THE PILGRIM: 4 TEAM MEMBERS) JUNE 2018 - PRESENT

- Developed game replay system in Unity which automatically uploads replays to a server where a designer can download and view to make the most of remote playtesting.
- Designed server infrastructure to support a drop-in drop-out multiplayer game using Client/Server topology.
- Implemented state replication on a Unity client over UDP with a custom Ubuntu C++ server on AWS.

#### TECHNICAL LEAD (DIGIPEN GAME-ON BELLVUE: 4 TEAM MEMBERS) JUNE 2017 - SEPTEMBER 2017

- Prototyped gameplay integration with an Alexa Skill.
- Developed core gameplay loop and networking integration for an online mobile resource management game using RFID readers attached to android tablets via Bluetooth.
- Managed connection with 3<sup>rd</sup> party company who makes the RFID hardware and server software.

#### TECHNICAL LEAD (OUTBREAK: 3 TEAM MEMBERS) NOVEMBER 2016 - PRESENT

- Redesigned feature development process to better parallelize work with growing technical team and to improve communications between the technical team and the ARG design team.
- Directed website redesign to bring the web app up to current industry standards using NodeJS and Express.
- Organized feature development between 3 developers to ship a product in a 2 week development window.
- Upgraded and simplified legacy PHP code base with features requested by the design team.
- Managed website using Microsoft Azure as the hosting service.

#### ENGINE AND TOOLS PROGRAMMER (OUTLIER: 18 TEAM MEMBERS) JUNE 2017 - APRIL 2018

- Spearheaded development on a multi-purpose editor in C++/C# and WPF to enable 3 designers and 5 artists to create content in engine.

- Integrated the Mono C# runtime to allow designers to write gameplay scripts in C# which improved gameplay iteration time.
- Researched and built an ECS 3D engine to streamline feature development for 8 other engineers.
- Developed python scripts that used clang to build an AST for our code base that was then used to generate serialization and reflection code. Integrated PhysX to manage our physics simulation.
- Developed pipeline to automatically generate Recast NavMeshes using information from PhysX.

## TECHNICAL LEAD AND PRODUCER (SYNTHALAXY: 6 TEAM MEMBERS)

JUNE 2016 - APRIL 2017

- Created a level editing tool in Qt to streamline level development for 2 designers.
- Programmed a Python script to generate boiler plate code for a graphics programmer.
- Designed a custom type introspection system in C++ to automatically serialize C++ types using Macros and Template metaprogramming.
- Made Executive decisions on technical problems.
- Delegated tasks out to the other 5 members on the team.

## TECHNICAL LEAD (CRASH COURSE: 4 TEAM MEMBERS)

JUNE 2016 - APRIL 2017

- Integrated Tiled tool into level enable our level designer to create rooms.
- Implemented custom memory debugger to find and fix memory leaks in our memory manager.
- Programmed data oriented particle systems to improve iteration time our particle design.

## SOFTWARE DEVELOPER (OAKMONT MOBILE APP: 2 TEAM MEMBERS)

JANUARY 2013 - APRIL 2014

- Developed android application using Java and the android SDK for students to keep up to date on school news and their grades.

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## PROFESSIONAL EXPERIENCE

### INNOVATIVE EDUCATION MANAGEMENT

JUNE 2018 - AUGUST 2018

- Coordinated integration between older bespoke student record system and new Google administration technologies to allow students and educators to easily interact using the Google suite.
- Led code review meetings to enforce security standards and improve code maintainability.

### PROJECT FUN

JULY 2017 – SEPTEMBER 2017

- Developed and executed lesson plans to teach approximately 30 8-12 students Java.
- Delegated work between myself and 4 TAs to give students maximum 1-on-1 attention.
- Managed classroom behavior.

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## EDUCATION

### DIGIPEN INSTITUTE OF TECHNOLOGY

EXPECTED GRADUATION: APRIL 2019

- Bachelors of Science in Computer Science and Real Time Interactive Simulation with a Minor in Mathematics.