Paul D'Pong

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SKILLS

Languages: C++, C#, C, Java, Kotlin, Dart, JavaScript
Frameworks/Engines: Unreal, Unity, OpenGL, DirectX, GLSL, GTK, React/React-Native, Android SDK

WORK EXPERIENCE

Red Hat, Open Source Software Engineering Intern – C, Java, GTK — May 2020 – August 2021

- Maintained the Eclipse Platform Standard Widget Toolkit (SWT) framework for GTK3 by conducting patch reviews, contributing bug fixes, and triaging bugs
- Planned and monitored the upgrading of SWT to GTK4
- Contributed to SWT GTK4 upgrades by porting functionality of UI widgets, bridging C functions to Java with JNI, and creating automated test snippets
- Overhauled Hi-DPI functionality, eliminating instances where Eclipse was unusable at high resolutions
- Improved TreeItem insertion and deletion performance by ~50% through reimplementation of cell rendering information

Dot Health, Android Software Developer Intern – Kotlin, React-Native, JavaScript — May 2019 – August 2019
June 2018 – August 2018

- Successfully co-led the porting of the React-Native app to a native MVVM-based Android app
- Implemented an efficient RecyclerView which supports custom Bezier curve and multiple view types
- Developed network layer for authentication and backend API interface using Retrofit
- Created a generalized health record form system, increasing efficiency by 70% when implementing new record types
- Built word highlighting and definition modals for health record observation headers
- Worked closely with designers to determine optimal designs within software constraints

PROJECTS

Vast, OpenGL Game Engine – C++, OpenGL, GLSL — Present

- Implemented rendering of VAOs and VBOs through mesh, model, and entity data structures
- Wrote GLSL vertex & fragment shaders for model rendering, fog, and transparency
- Accomplished basic point lighting and terrain grid system

Pedro, Ludum Dare 48 – C#, Unity — April 2021

- Worked with a group to create a "Deeper and deeper" themed 2D endless platformer
- Implemented a custom grid-based player controller with support for idle, walk, fall, and dig animations
- Designed blocks and obstacles generation with the ability to add variations through the Unity inspector

BulletTime, 2D 1v1 bullet-hell game – C++, Ubisoft HackerNest API — January 2021

- Implemented an event recording system to allow for a clone mechanism where previous player actions are replayed in upcoming rounds

Computer Graphics Snippets – C++ — January 2020 – April 2020

- Implemented ray tracing, boundary volume hierarchies, Catmull-Clark subdivision, forward & inverse kinematics, and spring-mass systems

CityMapper, OpenStreetMap Visualization Program – C++, GTK — January 2019 – April 2019

- Created a Google Maps clone to visualize OpenStreetMap data
- Implemented Dijkstra's path finding algorithm, with A* heuristic, and TSP greedy algorithm with 2-opt swap to find optimal weight-constrained courier path
- Interfaced with Toronto's OpenData API for live transit information using libcurl

EDUCATION

University of Toronto, St. George Campus — 2017 – Present
B.A.Sc. in Computer Engineering – GPA 3.83/4.0, Dean's Honour List

TA Experience: ECE244 Programming Fundamentals C++ (Fall 2021)
Expected Graduation: June 2022