BEN TRACY

Staff Software Engineer

@ benatracy@gmail.com   ☏ +44 7858349834   ● Edinburgh, UK   ⊕ www.bentracy.co.uk   in bentracy   ○ bensuo

SUMMARY

Confident and driven software engineer with a passion for performant and maintainable programming of all kinds. Professional experience working in large, cross-platform C++ codebases and heterogeneous programming across libraries and runtimes. Also experienced in low-level game technologies, particularly graphics and engine system development, and developing high performance software. Always eager to grow and improve upon my existing skill set, and tackle new and interesting challenges in my work.

EXPERIENCE

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Codeplay Software

📅 May 2019 – Ongoing   ● Edinburgh, UK

- Contributing to ComputeCpp, Codeplay's implementation of the Khronos SYCL standard, implementing new features and optimisations across the runtime library.
- Took ownership of and contributed to SYCL-BLAS, an open source hardware accelerated maths library using SYCL. Implemented and optimized kernels and other features throughout the library.
- Open source work on Intel's oneDNN library enabling NVIDIA hardware support for DNN functions through the cuDNN library and Intel's DPC++ compiler.
- Working across several different teams to address and identify bugs, and meet performance targets through optimization.
- Focused on implementing new features and optimizing performance in a maintainable way.

Software Engineering Intern

Veracity

📅 July 2017 – Jan 2019   ● Prestwick, UK

- Worked on developing embedded, cross-platform NVR software for Windows and Linux based devices.
- Developed production code across critical systems including networking, standards compliant interfaces, and data storage.
- Gained invaluable experience working with a large, multi-threaded, cross-platform C++ codebase using modern tools and language features in a professional team environment.

SKILLS

C++   C#   Python   OpenCL   OpenGL   CUDA   SYCL   CI   CMake   Unity   Linux   Optimisation   Debugging   Windows   GDB   Git

ACHIEVEMENTS

🏅 **UWS Court Medal**
2018 - Best in year

🏆 **Imagine Cup UK Finalist**
2015 - For games division

🏛 **Student of the Year**
2014 - For HNC

PROJECTS

Honours Project

Real-time Ray Tracing Renderer

A "real-time", ray-tracing-based renderer written in C++/OpenCL.

- Acceleration structures using bounding volume hierarchies with Morton code/Z-order curve ordering.
- GPU accelerated denoising with several different filters.
- Abstraction around OpenCL to create an easier to use and simplified API for rendering.
- Demo application for testing, performance measurement and display using Imgui.

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EDUCATION

B.Sc. Hons Computer Games Technology
University of the West of Scotland

📅 2016 – 2019

- Graduated with first class degree.
- Honours Project: Developed a real-time ray tracing based renderer using OpenCL, acceleration structures and denoising.
- Collaborated on a full Entity-Component based Game Engine using SDL2, Bullet physics and OpenGL, and used it to develop a Wipeout inspired racing game.
- Researched and implemented fur rendering using the shells and fins technique in OpenGL using geometry shaders.
- Developed a virtual reality technical demo which supports the Oculus Rift through the Oculus SDK.
- Developed applications for the Playstation 4 using the Playstation 4 developer kits and libraries.
- Researched and developed a 2D fluid simulation and visualizer.

HND Computer Games Development
West College Scotland

📅 2014 – 2016

- Developed a 2D cooperative platformer/fighting game.
- Developed a multiplayer brawler/party game in C#/Monogame as part of a small team, which reached the finals of the Microsoft Imagine Cup for Games.

B.Sc. Audio Technology with Multimedia
Glasgow Caledonian University

📅 Graduated 2011

- Studied various subjects from audio recording and manipulation to programming audio effects.

INTERESTS

Programming

- Currently learning and experimenting with Rust.
- Learning about console/hardware emulation and developing a classic Gameboy emulator in Rust.
- Developing a small, old-school JRPG with Unity.

Video Games

- Big fan of most genres, particularly RPGs.
- Play across PC and most consoles.
- Still love my N64.

Music

- Enjoy recording and producing music myself and in bands.
- Play guitar and drums primarily.
- Mostly produce rock and metal with some electronica on the side.