





ANTON MITKOV

Software Engineer

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PERSONAL PROFILE

I am a software engineer with a focus on heterogeneous computing. While I have worked with many of the main parallel computing platforms and API's, I am most experienced in SYCL. The interest in HPC arose from my academic background in game development, where I focused on rendering and writing shaders. Throughout my career I picked up a lot of passions and technologies I like, but the aspect of my work I always enjoyed the most was the collaboration with people, leading me to take on the role of agile facilitator on multiple teams.

EXPERIENCE

Staff Software Engineer

Codeplay Software Ltd.

 Feb. 2021 - Current  Edinburgh

- Writing, optimising and extending GPU accelerated code (SYCL/CUDA/HIP kernels).
- Working on modernising, extending and improving libraries (BLAS/DNN).
 - Added new accelerated code in machine learning libraries, extending functionality and improving performance.
 - Updated existing device code with latest specifications, extending support.
- Porting native applications and enabling them on various hardware.
 - Cross-compiled accelerated libraries and enabled running on embedded hardware.
 - Created drop-in replacements for native backends for machine learning libraries allowing them to run on different hardware.
 - Implemented easy-to-use tools for users to port native libraries, enabling them to run on different hardware.
 - Implemented popular machine learning models (VGG16, Resnet50) using different device-accelerated libraries.
- Writing automated test suites for libraries.
 - Wrote automated testing and benchmarking for libraries on different devices using Jenkins and Gitlab CI.
- Acted as a Scrum master for multiple teams
 - Facilitated agile ceremonies (Sprint planning, retrospectives, daily standups, etc.).
 - Supported teams through roadmapping of various projects.
 - Worked with Product Owner on backlog refinement.

TECHNOLOGIES

Heterogeneous computing

C, C++ SYCL OneAPI CUDA HIP OpenCL

Graphics

Compute Shaders OpenGL Vulkan GLSL Blender Unreal Engine 4

General development

VS, VScode Git/GitHub CMake GitLabCI Jenkins React Node.js MongoDB PostgreSQL

EDUCATION

1st B.Sc. (Honours) Games Development

Edinburgh Napier University

Sept 2015 – July 2019

Edinburgh

Relevant Modules:

- Software Engineering
- Mathematics for Software Engineering
- Computer Graphics
- Physics-Based Animation
- Algorithms and Data Structures
- Artificial Intelligence
- Advanced Games Engineering
- Concurrent and Parallel Systems

AAA Diploma for Secondary Education

Natural and Mathematical Secondary School "Geo Milev"

Sept 2009 – June 2015

Bulgaria

Education Specialised in: Mathematics, Informatics, IT and English

PERSONAL PROJECTS

GPGPU Nbody Simulation

<https://github.com/ShanoToni/NbodySimulation>

Nbody simulation implemented using a rendering engine build in OpenGL. The main goal was to analyse and compare parallel computing approaches and GPGPU optimisations using CUDA.

GPGPU Ray Tracing Engine

<https://github.com/ShanoToni/OpenGLRayTracer>

Implementation of an ray tracing rendering approach. Initial approach included using the CPU to calculate the colour of each pixel on the screen given the created scene. Final approach included creating the scene texture in the compute shader to improve speed, allowing a large number of objects and higher resolutions.

Domino Run Scene

<https://github.com/ShanoToni/PhysicsAnimation>

The program renders a number of domino shapes and a floor in a scene. The domino shapes have the force of gravity applied to them. Upon contact with the floor or each other an impulse-based collision response is applied to the given shapes, as well as a force of friction.

Additional projects available on my portfolio website or GitHub.

A DAY OF MY LIFE

