Ava Gordon

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Ava is a senior software engineer, with 15 years of programming experience, 8 professional. She was the lead developer of Hadean's spatial and simulation technology, Simulate. She is currently designing tools for profiling high performance and large scale systems. She is passionate about high performance / low latency software and large scale computing. Her technology expertise is with C++, Python, Linux, eBPF, profiling/optimisation, and GPU programming for graphics and compute. Having worked at a startup from the very early stages I have taken on a wide range of responsibilities beyond software development, including team leading, management, public speaking, technical writing, interviewing and hiring, evangelising best practices.

Key areas of interest are:

- Writing high performance software in C++ and Python for CPUs and GPUs
- Developing novel profling tools for high performance / low latency / datacenter scale programming
- Spatial data structures and algorithms
- Accelerators including clusters, CPU SIMD, GPGPU, and FPGA programming

CEO, Hadean: “I've never seen someone come into a company and have as big an impact as that”

VP Eng, Hadean: “She gets s*** done”

Hadean, September 2017 - Present

Hadean was a small 10 person startup when I joined. After quickly getting up to speed on the HadeanOS technology they were building, within two weeks I started developing a massively parallel spatial simulation engine for Gaming, Simulation and Science (Aether / Simulate).

Over 5 years (so far) later, Hadean is hugely successful with customers and partners in multiple markets including Epic and Microsoft, using Aether and other products. I helped grow the team, interviewing and onboarding new engineers, helped make the software production ready, massively scaled the performance, and developed various profiling tools and methods.

I developed great communication skills, writing technical and accessible blog posts for our company blog, training and onboarding within the company, external communication in a pre-sales role with partners and investors, collaborating with many disciplines (Technical Pre-Sales, Game Developers, Physicists, Biologists, Engineers, and many Software Engineers).

Createc, July 2016, September 2016 - September 2017

High performance spatial data processing, sensor fusion, real-time embedded systems, machine learning image classification (CNN, Tensorflow, Caffe) on multi-GPU system, embedded computer vision SLAM.

University of Cambridge, Computer Science, October 2013 - June 2016

Graduated with a 2:1 in Computer Science. Among my favourite courses were Machine Learning, Advanced Rendering, Bioinformatics, Comparative (System) Architectures, Computer Vision My final year project was an advanced real-time ray-tracing pipeline for desktop GPUs, which was written in C, OpenGL and GLSL and which showed a performance increase of 25x over the benchmark version of the renderer.

Side Projects

- Various C++ open source libraries and utilities
- A compiler for a new programming language intending to be used for high performance code on a variety of accelerators (multicore CPUs, SIMD coprocessors and GPUs)
    - LLVM, GLSL, Lex/Flex, Yacc/Bison, C++
- A network visualiser for processes distributed across machines
    - Javascript, D3.js, iproute2 SS
- A combined sampling and tracing profiler
    - Python, eBPF, DWARF debug info
- An experimental (tiny) soft 8 bit processor core on an FPGA
    - Verilog, FPGAs
- A boot loader in x86 assembly
    - x86 Assembly
- A dynamic website backed by a database
    - Go, Javascript, HTML, CSS

Published Articles

- Enhanced sampling of protein conformational states for dynamic cross-docking within the protein-protein docking server SwarmDock published in the journal Proteins: Structure, Function, Bioinformatics issue 88 volume 8
- MMORPGs PART 1: It's time to rethink game architectures
- MMORPGs PART 2: Applying data-driven design to optimize computation
- Introducing a new Open Source C++ library for Spatial Representations
- Hitboxes: Giving Your Game Physicality also re-published in Wireframe Magazine (issue 22, page 30)
- Net relevancy and compression: how to push Gbps of gamestate over the internet
- Optimisation of Voxel Rendering for Large Scenes on Desktop GPUs