

Zenna Tavares

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EDUCATION AND AWARDS

Fulbright Program - International Institute of Education

Awarded International Fulbright Science and Technology Award for Outstanding Foreign Students

Imperial College and Royal College of Art - Design London

Design Fellow on Innovation, Entrepreneurship and Design Program 2010 - Present

Developing modular and automated agricultural system for urban environments

Imperial College London

MSc in Biomedical Engineering with Neurotechnology 2009 - 2010

Thesis: *"Exploring Hierarchical Structure in Complex Brain Networks"*

Awarded Imperial College Neurotechnology Brain Machine Interface Competition Prize

University of Nottingham

MEng in Electronic Engineering with Japanese 2005 - 2009

Awarded First Class Degree with Honours

Awarded Farnell Project Student of the Year

Dissertation: *"XEAL: An XPU (CPU/GPU) Evolutionary Algorithm Library"*

Osaka University: JST ERATO LAB

Visiting Student 2008

Reinforcement Learning with CB² Robot. Network pruning in Fahlman neural networks.

Wilson's School and Sixth form

Studied and Achieved A Levels in Maths, Physics, Chemistry and Media 1997-2004

Achieved 9 GCSEs with A*s and As in Science, Maths and English

SKILLS

Scientific areas of expertise

- Evolutionary computation
- Graph theoretic methods in complex dynamical systems
- Neural imaging data analysis
- Machine learning: regression, classification, Bayesian inference, neural networks
- Simulation of electromagnetic propagation through 3D spatial environments with TLM.

Programming and Computation

C/CUDA (versions 1.0 - 3.0)

Expertise in GPU development; using extensive knowledge of the hardware intricacies and software model, guided by thorough performance profiling to achieve peak performance in several scientific domain algorithms:

- Parallelisation and implementation of scientific algorithms directly from academic literature
- Adaption of existing parallel methods (often designed for HPC multi-node CPUs) to GPU architectures
- Porting of serial CPU code to CUDA architectures
- Refactoring and further optimization of existing CUDA code to fully exploit compute throughput and memory bandwidth
- Proficient in analysis and creation of PTX intermediary assembler language: ISA version 2.0

Parallel and optimised serial C/C++

- Shared memory parallelism using OpenMP
- Distributed memory parallelism with MPI
- Hybrid OpenMP, MPI and CUDA in heterogenous high performance clusters
- Multiple compilers and environments such as GCC in Linux, Visual Studio in Windows
- Cross platform development and compilation using cmake
- Source code revision control: SVN, Git

Good working knowledge of (Xilinx) **FPGA** Programming using **VHDL**

Fluency in MySQL, PHP, Perl, HTML and CSS

Languages and Personal Skills

- Excellent Communicator, thrives in team environment
- Advanced in Japanese
- Excellent verbal and written English ability

RELATED EXPERIENCE

Cortexica Vision Systems

GPU Research Engineer November 2009 – May 2010 (Fixed Term Contract)

Role was to optimise core image recognition algorithm which runs continuously on clusters of over 60 GPUs capable of serving several hundreds of web submissions per second.

- Reduced run time of existing CUDA code from 30ms to 7ms
- Implemented highly optimised versions of several linear algebra routines such as QR matrix decomposition, matrix inversion
- Developed extensive tools for streamlining and debugging, CUDA
- Adapted CppUnit library for use with CUDA to allow semi automated unit testing of CUDA kernels

Papa X-Ray

Founder March 2010 - Present

Papa X-Ray is micro-sized technology company applying innovative solutions to everyday problems. Techniques primarily from machine learning and applied mathematics are used typically for consumer internet facing applications. Examples of the works done or currently underway:

- Size Connect - A recommendation engine for clothing sizes for online retailers
- Intelligent Bot - A neural network based intelligent webcrawler and indexer

Lokku

Engineering Intern

Worked on several discrete projects for rapidly growing real estate engine group nestoria.com. Learned an extensive array of technical skills as well as good software development practices, especially:

- Test driven development
- Advanced perl programming
- Bash scripting
- Server side load balancing
- Profile driven optimisation
- Efficiently handling vast amounts of data