Evan Lezar

Résumé

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Educational qualifications

2011 **PhD (Electronic Engineering)**, *Stellenbosch University*, Stellenbosch, South Africa.
thesis title: GPU Acceleration of Matrix-based Methods in Computational Electromagnetics
advisor: Prof. D.B. Davidson

2008 **MScEng (Electronic Engineering) (*cum laude*)**, *Stellenbosch University*, Stellenbosch, South Africa.
thesis title: *hp*-Adaptation for the FEM Analysis of Waveguides
advisor: Prof. D.B. Davidson

2005 **BEng (Electronic Engineering) (*cum laude*)**, *Stellenbosch University*, Stellenbosch, South Africa.
final year project title: Investigation of Score-Based Information Fusion Methods Applied to Speaker Verification
advisor: Prof. J.A. du Preez

2003 **BSc (Physics and Computer Science) (*cum laude*)**, *Stellenbosch University*, Stellenbosch, South Africa.

Work experience

2011–present **Postdoctoral research fellow**, *Department of Electrical and Electronic Engineering, Stellenbosch University*, Stellenbosch, South Africa.
I am investigating a number of aspects associated with modelling antenna structures for the South African Square Kilometre Array bid. This includes the collaborative development of an in-house finite element code for solving such problems.

2009–present **Research contractor (part-time)**, *EMSS-SA*, Stellenbosch, South Africa.
I am undertaking an investigation of GPU acceleration techniques for use in computational electromagnetic software.

2008 **Algorithm developer (part-time)**, *EMSS-Consulting*, Stellenbosch, South Africa.
I carried out an investigation of GPU acceleration and the optimisation of algorithms used in the IXUS software package. Development was done in C++ and Matlab.

2000–2005 **Application developer (part-time)**, *Made to Measure Computer Systems*, Hoekwil, South Africa.
I was involved in the development and testing of medical account software in Delphi under Microsoft Windows.

Academic experience

2009 **Project advisor**, *Department of Electrical and Electronic Engineering, Stellenbosch University*, Stellenbosch, South Africa.

Project 448: I proposed a final year research project and supervised the student responsible for completing the project.

2008 **Teaching assistant**, *Department of Electrical and Electronic Engineering, Stellenbosch University*, Stellenbosch, South Africa.

High frequency techniques 414: My responsibilities included the marking of tests and assisting with practicals for a final year course on wireless system design.

2006–2007 **Junior lecturer**, *Department of Mathematical Sciences, Stellenbosch University*, Stellenbosch, South Africa.

Computer science 252: I was responsible for teaching a second year course on computer architecture and assembler programming. This included the setting up and marking of theory and practical examinations as well as a year project.

Computer science bridging course: I was responsible for teaching a 1 week introductory computer science course for first year students that included lectures on computer architecture and algorithm design as well as practicals on the basics of programming in C.

Project experience

2008 **Google Summer of Code participant**, *K-3D*, www.k-3d.org.

I investigated the use of NVIDIA CUDA to accelerate various K-3D plugins while working as a member of the development team for this open source project. Development was done in C/C++ and Python.

2003 **COMAP Mathematical Contest in Modelling**, *Department of Applied Mathematics, Stellenbosch University*, Stellenbosch, South Africa.

I was part of a three person team that participated in a contest to solve a predefined problem using mathematical modelling techniques. Received an honourable mention.

Languages

English	**Fluent**	*spoken and written*
Afrikaans	**Fluent**	*spoken and written*
Japanese	**Elementary**	*passed Japanese Language Proficiency Test (N4)*

Computer skills

OS Linux, Windows

frequent use Python, C, Matlab, LaTeX, CUDA

knowledge of C++, Fortran, Delphi, HTML, Java, Oberon, Pascal, x86 Assembler

References

A list of references is available on request.

Publications

E. Lezar and D.B. Davidson. ***GPU Acceleration of Electromagnetic Scattering Analysis Using the Method of Moments***. Proceedings of the 13th International Conference on Electromagnetics in Advanced Applications - ICEAA'11, Torino, Italy, September 2011. Accepted for publication.

E. Lezar and D.B. Davidson. ***GPU Acceleration of Matrix-based Methods in Computational Electromagnetics***. PhD dissertation, Stellenbosch University, March 2011.

E. Lezar and D.B. Davidson. GPU-Accelerated Method of Moments by Example: Monostatic Scattering. ***IEEE Antennas and Propagation Magazine***, 52(6):120–135, December 2010.

E. Lezar and D.B. Davidson. GPU-based LU Decomposition for Large Method of Moments Problems. ***Electronics Letters***, 46(17):1194–1196, 19 August 2010.

E. Lezar and D.B. Davidson. ***GPU Acceleration of Method of Moments Matrix Assembly using Rao-Wilton-Glisson Basis Functions***, volume 1, pages 56–60. Proceedings of the 2010 International Conference on Electronics and Information Engineering (ICEIE 2010), Kyoto, Japan, August 2010.

E. Lezar and D.B. Davidson. ***Accelerating Electromagnetic Field Calculations for Antenna Simulations Using Commodity Graphics Processing Units: A Feasibility Study***. 1st African Conference on Computational Mechanics - AfriComp'09, Sun City, South Africa, January 2009.

E. Lezar and D.B. Davidson. ***GPU-based Arnoldi Factorisation for Accelerating Finite Element Eigenanalysis***, pages 380–383. Proceedings of the 11th International Conference on Electromagnetics in Advanced Applications - ICEAA'09, Torino, Italy, September 2009.

E. Lezar and D.B. Davidson. ***GPU-Assisted ARPACK: Towards GPU-Accelerated Finite Element Waveguide Analysis***. CHPC National Meeting and 5th BELIEF Symposium, Sandton, South Africa, December 2009.

E. Lezar. **hp-*Adaptation for the FEM Analysis of Waveguides***. Masters thesis, Stellenbosch University, March 2008.

E. Lezar and D.B. Davidson. ***Implementation of Arbitrarily High Order Hierarchical Vector Basis Functions for the Finite Element Analysis of a Rectangular Waveguide***. 8th IEEE AFRICON Conference - AFRICON'07, Windhoek, Namibia, September 2007.

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