

# Evan Lezar

## Curriculum Vitæ

Stellenbosch University

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### Educational qualifications

- 2008–present **PhD (Electronic Engineering)**, *Stellenbosch University*, Stellenbosch, South Africa.  
Graduation expected in March 2011.  
**thesis title:** Heterogeneous HPC Methods in Computational Electromagnetics  
**advisor:** Prof. D.B. Davidson
- 2006–2008 **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
- 2003–2005 **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
- 2001–2003 **BSc (Physics and Computer Science) (cum laude)**, *Stellenbosch University*, Stellenbosch, South Africa.

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### Work experience

- current **Research contractor**, *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.
- 2000–2005 **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.

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### 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.

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## Project experience

2008 **Google Summer of Code participant**, *K-3D*, [www.k-3d.org](http://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.

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## Languages

English	<b>Fluent</b>	<i>spoken and written</i>
Afrikaans	<b>Fluent</b>	<i>spoken and written</i>
Japanese	<b>Elementary</b>	<i>Taking classes at Cape Town Nihongo Kai, Cape Town, South Africa</i>

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## Computer skills

OS	Linux, Windows	
frequent use	Python, C, Matlab, L <sup>A</sup> T <sub>E</sub> X	knowledge of C++, Fortran, Delphi, HTML, Java, Oberon, Pascal, x86 Assembler

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## References

**Prof. D.B. Davidson**, *Stellenbosch University.*

MScEng and PhD advisor  
davidson@sun.ac.za

**Mr. F.J. du Plessis**, *EMSS-Consulting.*

Co-worker  
fduplessis@emss.co.za

**Prof. J.A. du Preez**, *Stellenbosch University.*

Final year project advisor  
dupreez@sun.ac.za

**Dr. U. Jakobus**, *EMSS-SA.*

Research coordinator  
jakobus@emss.co.za

**Prof. H.C. Reader**, *Stellenbosch University.*

Lecturer  
hcreader@sun.ac.za

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## Publications

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 and D.B. Davidson. ***GPU-based Arnoldi factorisation for accelerating finite element eigenanalysis.*** Proceedings of the 11th International Conference on Electromagnetics in Advanced Applications - ICEAA'09, Torino, Italy, September 2009.

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. ***hp-Adaptation for the FEM Analysis of Waveguides.*** Master's 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.