

CONTACT  
INFORMATION

Department of Computer Science  
The University of Pretoria  
Lynwood Rd.  
Hatfield, Pretoria, South Africa

Cell: (072) 613-6045  
Work: (012) 420-5242  
E-mail:  
bleonard@cs.up.ac.za

## CITIZENSHIP

South Africa

RESEARCH  
INTERESTS

Computational intelligence, computer vision, human-computer interaction, data compression.

## EDUCATION

**The University of Pretoria**, Pretoria, South Africa

***M.Sc. (Computer Science)*** Expected graduation date: November 2014

- *Specialisation:* Computational intelligence
- *Thesis title:* Towards Self-Adaptive Particle Swarm Optimizers by Means of Cultural Evolution.
- *Supervisor:* Prof. A.P. Engelbrecht

**The University of Pretoria**, Pretoria, South Africa

***B.Sc. (Hons) (Computer Science)*** **2011**

- *Areas of focus:* Computational intelligence, data mining, computer security, formal methods for algorithm construction and analysis, computer networks theory, research methods.
- *Research project title:* Empirical Analysis of Heterogeneous Particle Swarms in Dynamic Environments.
- *Supervisor:* Prof. A.P. Engelbrecht

**The University of Pretoria**, Pretoria, South Africa

***B.Sc. (Computer Science)*** **2010**

- *Areas of focus:* Computational intelligence, programming language theory, computer networks, databases, discrete data structures, software engineering principles & practices.
- *Programming languages:* Java, C, C++, JavaScript, PHP and others.

**Hoërskool Garsfontein**, Pretoria, South Africa

***Matric***

**2004 - Passed with endorsement**

- Mathematics HG
- Science HG
- Computer Studies HG
- Afrikaans 1st language HG
- English 2nd language HG
- Accounting SG

WORK  
EXPERIENCE

**The University of Pretoria**, Pretoria, South Africa

***Senior Programmer and Researcher***

**January 2012 to present**

- Design, implementation and maintenance of a platform-independent cluster for the execution of large-scale computational intelligence experiments (including both server-side and client side programming and web design).
- Configuration and maintenance of Unix servers and other computing infrastructure.
- Contribution of code to the [CILib](#) open-source computational intelligence library.
- Presenting international workshops and tutorials on the use of CILib to conduct computational intelligence research.

*Reference at the Department of Computer Science:*

Prof. A.P. Engelbrecht  
(engel@cs.up.ac.za)

**The University of Pretoria**, Pretoria, South Africa

***Research Assistant***

**March 2010 to December 2011**

- Implementation of modern computational intelligence algorithms for research purposes.
- Contribution of code to the [CILib](#) open-source computational intelligence library.

*Reference at the Department of Computer Science:*

Prof. A.P. Engelbrecht  
(engel@cs.up.ac.za)

**Meraka Institute**, CSIR, Pretoria, South Africa

***Software Engineer***

**March 2009 to November 2009**

- Designed and implemented a multi-user text based game engine (MUD) for Dr Math on MXit.
- The project was done in partial fulfilment of a *B.Sc. (Computer Science)* degree at the University of Pretoria.

*Reference at CSIR Meraka Institute:*

Laurie Butgereit (lbutgereit@csir.co.za)

**The University of Pretoria**, Pretoria, South Africa

***Laboratory Assistant***

**March 2008 to February 2010**

- Maintenance of computers and printers in the laboratory.
- Providing assistance to students in any of the following areas:
  - Logging onto campus network using Novell.
  - Use of word processors, spreadsheet applications and presentation design software (in both Windows and Linux environments).
  - Sending of e-mails using the university mail server, or third party mail servers such as GMail.
  - Provide support to the best of my ability on any other issues students may experience in the laboratory.

*Reference at the UP Open Labs:*

Retief Joyce (retief.joyce@up.ac.za)

TEACHING  
EXPERIENCE

**The University of Pretoria**, Pretoria, South Africa

*Third Year and Honours Teaching*

**2012 to present**

- Lectures on the use and development of the CiLib computational intelligence library.

**University of Pernambuco**, Recife, Brazil

*Third Year and Honours Teaching*

**2012**

- Presented a series of tutorials on the use and development of the CiLib open source computational intelligence library.

**Brock University**, Toronto, Canada

*Honours Teaching*

**2011**

- Presented a series of tutorials on the use and development of the CiLib open source computational intelligence library.

PUBLICATIONS

Leonard, B. and Engelbrecht, A. On the optimality of Particle Swarm Optimizers in Dynamic Environments. *2013 Congres on Evolutionary Computation*, 2013.

Leonard, B. and Engelbrecht, A. Scalability study of Particle Swarms in Dynamic Environments. *ANTS 2012*, 2012.

Leonard, B. and Engelbrecht, A. and Van Wyk, A. Heterogeneous particle swarms in dynamic environments. *2011 IEEE Symposium on Swarm Intelligence*, 2011.

Butgereit, L. and Leonard, B. *et al.* Dr Math gets MUDDY: the “dirt” on how to attract teenagers to mathematics and science by using multi-user dungeon games over Mxit on cell phones. *IST Africa 2010*, 2010.

TECHNICAL  
SKILLS

**Programming Languages and Tools:** Java, C, C++, JavaScript, PHP, Python, UNIX shell scripting, git, maven, sbt, Netbeans, Eclipse and others.

**Databases:** SQL, mySQL, MongoDB.

**Applications:** L<sup>A</sup>T<sub>E</sub>X, B<sub>I</sub>B<sub>T</sub>E<sub>X</sub>, Microsoft Office, Open Office, Libre Office, and other common productivity packages for Windows and Linux platforms.

**Operating Systems:** Linux and other UNIX variants, Microsoft Windows XP, Windows Vista / Windows 7 / Windows 8.

**Networking:** Extensive experience in setting up and maintaining wired and wireless networks; Experience programming CISCO routers via telnet in WAN environments; Experience installing and configuring Mikrotik routers via WinBox in both LAN and WAN environments.

**Hardware:** Solid knowledge of computer components and experience in building a variety of computer systems.