Curriculum Vitae

1 Career summary

1.1 Personal Details

Surname	van den Bergh
First names	Frans
ID number	7703015029087
Date of birth	1 March 1977
Residential address	#5 Victor Park Romp str Murrayfield 0184
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1.2 Education

2000–2001	University of Pretoria Ph.D Computer Science	(Pretoria)
1999	University of Pretoria M.Sc. Computer Science *Cum laude*	(Pretoria)
1998	University of Pretoria B.Sc. (Hons) Computer Science *Cum laude*	(Pretoria)
1995–1997	University of Pretoria B.Sc. Computer Science *Cum laude*	(Pretoria)
1989–1994	Extracurricular Centre for Gifted Children Specialising in Computer Science	(Pretoria)
1993–1994	Hoërskool Montana Senior Certificate (Grade 12) Distinctions in Mathematics, Science, Computer Science and English (2nd language)	(Pretoria)
1990–1992	Hoërskool Louis Trichardt	(Louis Trichardt)
1986–1989	Laerskool Krugerpark	(Potgietersrus)
1983–1985	Laerskool Unika	(Randburg)

1.3 Employment history

2007/9–current	CSIR / Meraka Institute (Pretoria) Principal Researcher
2005/6–2007/8	CSIR / Meraka Institute (Pretoria) Senior Researcher
2004/11–2005/5	CSIR Satellite Application Centre (Hartebeeshoek) Researcher
2003/4–2004/10	Rapid Mobile (Pretoria) Embedded Software Specialist. Duties included: a) Design and implementation of host protocols (on embedded platforms) for interfacing with HF modems. b) Implementation and maintenance of Automatic Link Establishment HF protocols. c) All projects involved cross-platform (Intel x86, TI C6x, Motorola 860) C++ and C development.
2002/6–2003/3	University of Pretoria (Pretoria) Senior Lecturer. Undergraduate courses lectured include Operating systems and Computer Graphics. Postgraduate courses include Data Compression and Advanced Computer Graphics. Supervision/co-supervision of several M.Sc students. Duties included the design of curriculum of the courses presented.
1998/6–2001/12	University of Pretoria (Pretoria) Part-time Lecturer. Undergraduate courses lectured include *Data Structures and Algorithms*, *Computer Architecture*, *Programming Languages* and *An Introduction to Programming in C*. Also lectured a postgraduate course in *Data Compression* Duties included the design of the curriculum of some of the courses presented.
2000	Bond University (Sandton) Part-time Lecturer for a first course in programming (in Java).
1997	EPI-USE systems (Pretoria) UNIX system administrator
December 1996	High-Performance Systems (Midrand) Presented a C++ programming course.

1.4 Career achievements

1. Within the first six years of publication, my Ph.D thesis has been cited at least 327 times.
2. During the period 2000 through to 2008, I have been the lead author of a number of publications, of which 9 have each been cited at least 30 times. (This exceeds the average for NRF B-rated South African computer scientists, which is estimated at around three papers with more than 30 citations).
3. In total, my publications have attracted 1077 citations, with a resulting h-index of 12.

2 Professional activities

2.1 Participation in the Academic peer-review process for journals

- Regular participation in the review process for the *IEEE Transactions on Evolutionary Computing*. This journal as an impact score of 3.77 (in 2006). I reviewed 6 papers for this journal in 2005, 12 in 2006, 7 in 2007, and 3 so far for 2008.
- Regular participation in the review process for the *Journal of Applied Soft Computing (ASOC)* — 3 papers in 2007, and 1 so far in 2008.
- Participation in the review process for the *International Journal of Pattern Recognition and Artificial Intelligence* — 2 papers so far in 2008.
- Participation in the review process for the *Applied Mathematics and Computation* journal.
- Participation in the review process for the *Operations Research Letters* journal.
- Participation in the review process for the *Remote Sensing of Environment* journal.
- Participation in the review process for the *South African Computer Journal* (SACJ).
- Participation in the review process for the *The International Journal of Computers, Systems and Signals* (IJCSS).
- Participation in the review process for the *IEEE Transactions on Systems, Man and Cybernetics*.
- Participation in the review process for the *Journal of Computational Chemistry* (optimisation related).
- Participation in the review process for the *Journal of Automated Reasoning*.

2.2 Conference program committees served on

- *IEEE Conference on Evolutionary Computation*, 2005–2008. Co-organised a special session on Particle Swarm Optimisation for CEC2007.
- *World Congress on Computational Intelligence (WCCI)*, which incorporates the *IEEE Conference on Evolutionary Computation*, 2008.
- *IEEE Swarm Intelligence Symposium*, 2006–2008.
- *PRASA*, 2006–2007.

2.3 Other academic review duties

- Participation in the review process for NRF grants.
- Participation in the review process for NRF rating applications.

- External examiner for the following courses at the University of Pretoria: COS314 (Artificial Intelligence), KMI780 (Honours AI), GRF780 (Honours Computer Graphics), SPE780 (Special themes — honours projects), COS344 (Computer Graphics) in the from the 2006 academic year onwards.
- Presented the honours-level Data Compression course (DCP780) at the University of Pretoria in 2008.
- External examiner for masters-level theses at the Tshwane University of Technology and Stellenbosch University.

2.4 CSIR activities

- Responsible for remote sensing / computer vision component of the *Generation and harnessing of DYnamic Spatial Intelligence* (GenDySI) SRP project, which completed in March 2007. Funding level for my component: R661k over 18 months.
- Responsible for remote sensing / computer vision component of the *Modelling complex biophysical processes associated with diseases* (Cholera) SRP project, which completed in March 2007. Funding level for my component: R464k over 18 months.
- Responsible for computer vision component of the *Advanced Digital Image Technology for Port Engineering* (Ports) SRP project, which is currently running, which completed in March 2008. Funding level for my component: R400k over 18 months.
- Responsible for urban remote sensing / computer vision component of the *Observations of land quality* (Land Quality) SRP project, which is currently running, which completed in March 2008. Funding level for my component: R600k over 18 months.
- Involved in the *Time-series analysis of satellite data with HPC* (HiTempo) SRP project, which was awarded to Konrad Wessels / RSRU in 2007. Funding level for my component: To be determined.

2.5 Professional Memberships & Ratings

- A member of the *South African Institute of Computer Scientists and Information Technologists* (SAICSIT) (1999–2003).
- A member of the IEEE and IEEE Computer Society (2000–2003), (2007–2008).
- A Pr.Sci.Nat registered with SACNASP, member number (400309/06), since 2006.
- Obtained NRF Y-rating in December 2007.

2.6 Postgraduate Supervision

During the period 2002–2006 the following M.Sc students have successfully completed their studies under my co-supervision:

1. Riaan Brits (Student No: 9708768). Riaan passed with distinction.

2. Edwin Stanley Peer (Student No: 9805465). Edwin passed with distinction.
3. James Pun (Student No: 9705668). James passed with distinction.

The following masters level students are currently under my co-supervision:

1. André Carl Hauptfleisch (CSIR studentship employee, student No: 99081513)
2. Rui Vieira (CSIR studentship employee)
3. Marna van der Merwe (CSIR employee).
4. Leonce P. Abeigne-Ella (thesis submitted at TUT)

The following PhD students are currently under my co-supervision:

1. Gustave Udahemuka (Partially funded by CSIR)
2. Seare Araya (CSIR studentship employee)

3 Awards and recognition

- University of Pretoria bursaries were awarded for all my degrees.
- The Computer Society of South Africa (CSSA) prize for the best final year Computer Science student was awarded in 1998 for my B.Sc degree (completed in 1997).
- An NRF prestige bursary was awarded in 1999 for my Ph.D studies.

4 Research outputs

4.1 Publications

Note: Citation numbers obtained using `http://scholar.google.com`. Misspelled citations (within same query) were added up. Date of query: 22/07/2008.

4.1.1 Non-reviewed popular articles

1. F. van den Bergh. Optimising the constraints of a diurnal temperature cycle model, ScienceScope, 2(4), pages 51–53, March 2008.

4.1.2 Non-reviewed technical reports

1. F. van den Bergh. Field delineation — A texture-segmentation approach. MSMI application note 7c. September 2005.
2. F. van den Bergh. Appendix B: Remote sensing, Modeling complex biophysical processes associated with diseases. March 2006.

3. F. van den Bergh and A. Hauptfleisch. MARCUSIM: MApping and Road Classification Using Satellite IMagery — survey. March 2006.

4. F. van den Bergh, C. Parbhoo and I. Tchangou. Urban settlement classification: Sensor comparison, April 2007.

5. F. van den Bergh and R. Vieira, Measuring the change in porosity of breakwater armour unit configurations, April 2008.

4.2 Non-reviewed Conference papers

1. D. Moodley, A. L. Terhorst, I. Simonis, G. A. Mcferren and F. van den Bergh. Using the Sensor Web to detect and monitor the spread of wild fires. 2nd International symposium on geo-information for disaster management, Goa, India, 25–26 September 2006. **Cited 0 times.**

2. F. van den Bergh, K. J. Wessels, S. A. Archibald, A. K. Bachoo, K. Steenkamp. Time-series analysis of hyper-temporal satellite data using high performance computing. European Association of Remote Sensing Laboratories (Earsel): Time Series workshop, Bolzano, Italy, June 2007. **Cited 0 times.**

3. A. K. Cooper, J. M. Greben, F. van den Bergh, I. M. A. Gledhill, B .R. Canoo, W. J. V. D. M. Steyn and R. De Villiers. A preliminary physics-engine model of dolosse interacting with one another. Sixth South African Conference on Computational and Applied Mechanics (SACAM08). Cape Town, 26–28 March 2008. **Cited 0 times.**

4.2.1 Peer-reviewed Conference papers

1. F. van den Bergh, J. Roos, and J. Botha, Improving ABR Flow Control. In *Proceedings of SATNAC98*, pages 18–25, University of Cape Town, South Africa, 1998. **Cited 0 times.**

2. F. van den Bergh, J. Roos, and J. Botha, Enhancing ABR Flow Control through an Improved Communications Infrastructure. In *Proceedings of ICCCN'98*, pages 746–750, Lafayette, Louisiana, USA, 1998. **Cited 0 times.**

3. F. van den Bergh. Particle Swarm Weight Initialization in Multi-layer Perceptron Artificial Neural Networks. In *Development and Practice of Artificial Intelligence Techniques (ICAI)*, pages 41–45, Durban, South Africa, September 1999. **Cited 29 times.**

4. F. van den Bergh and A. P. Engelbrecht. Effects of Swarm Size on Cooperative Particle Swarm Optimisers. In *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO)*, pages 892–899, San Francisco, USA, July 2001. **Cited 73 times.**

5. F. van den Bergh and A. P. Engelbrecht. Training Product Unit Networks using Cooperative Particle Swarm Optimisers. In *Proceedings of the International Joint Conference on Neural Networks (IJCNN)*, pages 126–132, Washington DC, USA, July 2001. **Cited 107 times.**

6. F. van den Bergh and A. P. Engelbrecht. A New Locally Convergent Particle Swarm Optimiser. In the Proceedings of the IEEE International Conference on Systems, Man and Cybernetics, Hammamet, Tunisia, October 2002. **Cited 87 times.**

7. R. Brits, A. P. Engelbrecht and F. van den Bergh. Solving Systems of Unconstrained Equations using Particle Swarm Optimization. In the Proceedings of the IEEE International Conference on Systems, Man and Cybernetics, Hammamet, Tunisia, October 2002. **Cited 16 times.**

8. R. Brits, A. P. Engelbrecht and F. van den Bergh. A Niching Particle Swarm Optimizer. In the Proceedings of the Conference on Simulated Evolution And Learning, Singapore, November, 2002. **Cited 50 times.**

9. E. S. Peer, F. van den Bergh and A. P. Engelbrecht. Using Neighborhoods with Guaranteed Convergence PSO. In the Proceedings of the IEEE Swarm Intelligence Symposium, pages 235-242, Indianapolis, USA, 2003. **Cited 44 times.**

10. R. Brits, A. P. Engelbrecht and F. van den Bergh. Scalability of Niche PSO. In the Proceedings of the IEEE Swarm Intelligence Symposium, pages 228-234, Indianapolis, USA, 2003. **Cited 12 times.**

11. E. S. Peer, A. P. Engelbrecht, F. van den Bergh. CIRG@UP Optibench: A Statistically Sound Framework for Benchmarking Optimisation Algorithms. In the Proceedings of the Congress on Evolutionary Computation, pages 2386–2392, Canberra, Australia, 2003. **Cited 3 times.**

12. F. van den Bergh and P. E. Frost, A Multi-Temporal Approach to Fire Detection using MSG Data. The third international workshop on the analysis of multi-temporal remote sensing images (Multitemp'05), Biloxi, Mississippi, USA, 2005. **Cited 2 times.**

13. A.C. Hauptfleisch, F. van den Bergh , A.K. Bachoo and A. P. Engelbrecht, A Comparison of Canny and V1 Neural Network Based Edge Detectors Applied to Road Extraction. 17th Annual Symposium of the Pattern Recognition Association of South Africa, Parys, South Africa, 29 Nov–1 Dec 2006. **Cited 0 times.**

14. F. van den Bergh, M.A. van Wyk and B.J. van Wyk. A comparison of data-driven and model-driven approaches to brightness temperature diurnal cycle interpolation. 17th Annual Symposium of the Pattern Recognition Association of South Africa, Parys, South Africa, 29 Nov–1 Dec 2006. **Cited 0 times.**

15. G. Udahemuka, F. van den Bergh and M. A. van Wyk. Robust fitting of diurnal brightness temperature cycle. 18th Annual Symposium of the Pattern Recognition Association of South Africa, Pietermaritzburg, Kwazulu-Natal, South Africa, 28–30 November 2007. **Cited 0 times.**

16. I. Tchangou Toudjeu, B. J van Wyk, M. A. van Wyk and F. van den Bergh. Global Image Feature Extraction Using Slope Pattern Spectra. Proceedings of the 5th International Conference on Image Analysis and Recognition (ICIAR), Póvoa de Varzim, Portugal, June 25–27, 2008. **Cited 0 times.**

17. L. P. Abeigne Ella, F. van den Bergh, B. J. van Wyk and M. A. van Wyk. A comparison of texture feature algorithms for urban settlement classification. IEEE International Geoscience & Remote Sensing Symposium (IGARSS), Boston, Massachusetts, USA, July 6–11 2008. **Cited 0 times.**

4.2.2 Peer-reviewed Journal papers

1. F. van den Bergh and V. Lalioti, Software Chroma Keying in an Immersive Virtual Environment. *South African Computer Journal*, (24):155–162, November 1999. **Cited 5 times.** `Journal Impact Score: not on ISI list.`

2. F. van den Bergh and A. P. Engelbrecht. Cooperative Learning in Neural Networks using Particle Swarm Optimizers. *South African Computer Journal*, (26):84–90, November 2000. **Cited 114 times.** `Journal Impact Score: not on ISI list.`

3. F. van den Bergh and A. P. Engelbrecht. A cooperative approach to particle swarm optimisation. *IEEE Transactions on Evolutionary Computation*, (3):225–239, June 2004. **Cited 157 times.** `Journal Impact Score: 3.26.`

4. F. van den Bergh and A. P. Engelbrecht. A Study of Particle Swarm Optimization Particle Trajectories. *Information Sciences*, 176(8):937–971, April 2006. First appeared online in March 2005. **Cited 47 times.** `Journal Impact Score: 0.72.`

5. R. Brits, A. P. Engelbrecht and F. van den Bergh. Locating multiple optima using particle swarm optimization. *Applied Mathematics and Computation*, Vol. 189:1859–1883, 2007. **Cited 1 times.** `Journal Impact Score: 0.68.`

6. F. van den Bergh, M. A. van Wyk, B. J. van Wyk and G. Udahemuka, A comparison of data-driven and model-driven approaches to brightness temperature diurnal cycle interpolation. *SAIEE Africa Research Journal*, Vol. 98(3):81–86, 2007. **Cited 0 times.** `Journal Impact Score: not on ISI list.`

7. B. J. van Wyk, M. A. van Wyk, F. van den Bergh. A note on difference spectra for fast extraction of global image information. *SAIEE Africa Research Journal*, Vol. 98(2):66–67, 2007. **Cited 0 times.** `Journal Impact Score: not on ISI list.`

8. F. van den Bergh, J. P. Holloway, M. Pienaar, R. Koen, C. D. Elphinstone and S. Woodborne. A Comparison of various Modelling Approaches applied to V. Cholera Case Data. *ORiON*, 24(1):17–36, June 2008. **Cited 0 times.** `Journal Impact Score: not on ISI list.`

9. G. Udahemuka, B. J. van Wyk, M. A. van Wyk and F. van den Bergh, Robust Fitting of Diurnal Brightness Temperature Cycles. Accepted for publication in the *South African Computer Journal*.

4.2.3 Books / Theses

1. F. van den Bergh, A Device-free Locator using Computer Vision Techniques. MSc thesis, Department of Computer Science, University of Pretoria, Pretoria, South Africa, 1999. **Cited 4 times.**

2. F. van den Bergh, An Analysis of Particle Swarm Optimizers. PhD thesis, Department of Computer Science, University of Pretoria, Pretoria, South Africa, 2002. **Cited 327 times.**

4.2.4 Summary of citation numbers

The 13 top-cited publications listed above received the following citation counts: 327, 157, 114, 109, 87, 73, 50, 47, 44, 29, 16, 12 and 5.

This implies that the peer reviewved publications listed above receives an h-index of 12.