

David McGregor SQUIRE

B.Sc., B.E. Hons., Ph.D.

Australian citizen.

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## Academic experience

**2007-present:** Senior Lecturer, Clayton School of Information Technology, Monash University, Melbourne, Australia.

**2006:** On sabbatical. Visiting the Department of Statistics at Oxford University and the Machine Intelligence Laboratory at Cambridge University.

**2005:** Associate Head, Caulfield School of Information Technology, Monash University, Melbourne, Australia.

**2004–2006:** Senior Lecturer, School of Computing Science and Software Engineering (CSSE), Monash University, Melbourne, Australia.

**2000–2003:** Lecturer, School of Computing Science and Software Engineering, Monash University, Melbourne, Australia.

**April 1998–1999:** Matre-assistant (Senior Researcher), founding member of the *Viper* group, Computing Science Centre, University of Geneva, Switzerland.

**1996–March 1998:** Post-doctoral research fellow, Vision Group, Computing Science Centre, University of Geneva, Switzerland.

## Research interests

### Image processing and computer vision

- use of Bayesian models, combining Gaussian mixtures and Markov random fields, for image segmentation, applied to dermatoscopic images and aerial photographs
- application of independent component analysis to the learning of texture features, with a focus on dermatoscopic images
- invariant pattern recognition

### Content-based retrieval of multimedia data (CBMR)

- application of CBMR techniques to medical diagnosis support, with a particular interest in melanoma
- understanding, and learning from, human similarity judgments in CBMR
- Performance evaluation and benchmarking of CBMR systems
- software engineering aspects of the design of a distributed CBMR system. Co-developer of the GNU Image Finding Tool
- protocols for querying multimedia database systems. Founding team member for the MRML (Multimedia Retrieval Mark-up Language) project
- combining textual and visual cues for multimedia similarity

### Other research interests

- text retrieval and web mining for automated plagiarism detection, including development of Damocles system, widely applied at Monash University
- fine-grained signing and distribution of digital documents, especially in the context of the XML digital signature

### Selected Publications

Denny and David McG. Squire, **Visualization of Cluster Changes by Comparing Self-Organizing Maps**, *The Ninth Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD '05)*, Hanoi, Vietnam. No. 3518 in Lecture Notes in Computer Science, pp. 410–419, Springer-Verlag, 18–20 May 2005.

Laurence Bull, David McG. Squire and Yuliang Zheng, **A Hierarchical Extraction Policy for Content Extraction Signatures**, *International Journal on Digital Libraries (Special issue on Security)*, 4, 3, pp. 208–222, 2004.

Laurence Bull and David McG. Squire, **XML Signature Extensibility Using Custom Transforms**, *Proceedings of the Fifth International Conference on Web Information Systems Engineering (WISE 2004)*, Brisbane, Australia. No. 3306 in Lecture Notes in Computer Science, pp. 102–112, Springer-Verlag, 22–24 November 2004..

Henning Mller, Patrick Ruch, David McG. Squire, Christian Lovis and Antoine Geissbuhler, **Using open source software for medical image retrieval**, *Proceedings of the 11th World Congress on Medical Informatics (MEDINFO 2004)*, San Francisco, CA, USA, September 7–11 2004.

Henning Mller, David McG. Squire and Thierry Pun, **Learning from user behaviour in image retrieval: Application of market basket analysis**, *International Journal of Computer Vision*, 56, 1–2, pp. 65–77, 2004.

Walter ten Brinke, David McG. Squire and John Bigelow, **Supervenience in Content-Based Image Retrieval**, *International Conference on Formal Ontology in Information Systems (FOIS 2004)*, Torino, Italy, November 4–6 2004.

Laurence Bull, Peter Stanski and David McG. Squire, **Content Extraction Signatures using XML Digital Signatures and Custom Transforms On-Demand**, *Proceedings of the 12th International World Wide Web Conference (WWW2003)*, Budapest, Hungary, pp. 170–177, 20–24 May 2003.

Henning Mller, Wolfgang Mller, Sthpane Marchand-Maillet, David McG. Squire and Thierry Pun, **A Framework for Benchmarking in Visual Information Retrieval**, *International Journal on Multimedia Tools and Applications*, 21, 1, pp. 55–73, September 2003.

Andre Oboler, David McG. Squire and Kevin B. Korb, **Why don't we practice what we teach? Engineering Software for Computer Science Research in Academia**, *Proceedings of the First International Conference on Software Engineering Research and Applications (SERA'03)*, San Francisco, USA, pp. 25–30, 25–27 June 2003.

Henning Mller, Wolfgang Mller, Sthpane Marchand-Maillet, David McG. Squire and Thierry Pun, **A web-based evaluation system for content-based image retrieval**, *Proceedings of the 3rd International Workshop on Multimedia Information Retrieval (in conjunction with ACM Multimedia 2001)*, Ottawa, Canada, pp. 50–54, October 5 2001.

Henning Mller, Wolfgang Mller, David McG. Squire, Sthpane Marchand-Maillet and Thierry Pun, **Performance Evaluation in Content-Based Image Retrieval: Overview and Proposals**, *Pattern Recognition Letters*, 22, 5, pp. 593–601, 2001.

Wolfgang Mller, Sthpane Marchand-Maillet, Henning Mller, David McG. Squire and Thierry Pun, **Evaluating image browsers using structured annotation**, *Journal of the American Society for Information Science and Technology (JASIST)*, 52, 11, pp. 961–968, September 2001.

Henning Mller, Wolfgang Mller, Sthpane Marchand-Maillet, Thierry Pun and David McG. Squire, **Strategies for positive and negative relevance feedback in image retrieval**, *Proceedings of the 15th International Conference on Pattern Recognition (ICPR 2000)*, Barcelona, Spain, September 3–8 2000.

Wolfgang Mller, Henning Mller, Stphane Marchand-Maillet, Thierry Pun, David McG. Squire, Zoran Pecenovc, Christoph Giess and Arjen P. de Vries, **MRML: A Communication Protocol for Content-Based Image Retrieval**, *Fourth International Conference On Visual Information Systems*, Lyon, France, November 2–4 2000.

David McG. Squire and Terry M. Caelli, **Invariance Signatures: Characterizing contours by their departures from invariance**, *Computer Vision and Image Understanding*, 77, 3, pp. 284–316, March 2000.

David McG. Squire, Wolfgang Mller, Henning Mller and Thierry Pun, **Content-based query of image databases: inspirations from text retrieval**, *Pattern Recognition Letters*, 21, 13–14, pp. 1193–1198, 2000.

David McG. Squire, **Learning a similarity-based distance measure for image database organization from human partitionings of an image set**, *Fourth IEEE Workshop on Applications of Computer Vision (WACV'98)*, pp. 88–93, Princeton, NJ, USA, October 1998.

David McG. Squire and Thierry Pun, **Assessing agreement between human and machine clusterings of image databases**, *Pattern Recognition*, 31, 12, pp. 1905–1919, 1998.

Thierry Pun and David McG. Squire, **Statistical structuring of pictorial databases for content-based image retrieval systems**, *Pattern Recognition Letters*, 17, pp. 1299–1310, 1996.

Terry M. Caelli, David McG. Squire and Tom P.J. Wild, **Model-based neural networks**, *Neural Networks*, 6, pp. 613–625, 1993.

## Full list of publications

A complete list of my publications is available from:

<http://www.csse.monash.edu.au/~davids/publications/>.

## Programme committees

Australian Joint Conference on Artificial Intelligence, 2004–2006.

Image and Vision Computing New Zealand (IVCNZ), 2001–2002, 2005, 2007.

ICCSA'2006 Workshop on Visual Computing and Multimedia, 2006.

International Conference on Mobile and Ubiquitous Multimedia (MUM 2002), Oulu, Finland, 2002.

Journes des jeunes chercheurs francophones en vision par ordinateur (ORASIS 99), Aussois, France, 1999.

I have acted as a reviewer for a variety of other conferences, and journals such as *Computer Vision and Image Understanding*, the *Journal of Research and Practice in Information Retrieval*, *Data and Knowledge Engineering*, and *Pattern Recognition Letters*.

## Major Grants

- **2004–2007: ARC Linkage Grant LP0455105**  
Formal context analysis in rapidly evolving knowledge webs (4CARE-K).  
Chief Investigators: Prof. Heinz Schmidt, Dr David Squire  
Value: \$A 230K (ARC), \$A 222K (industrial partner)
- **2000–2002: Swiss National Science Foundation 2000–059152**  
Image archival and retrieval for multimedia databases based on exploratory statistics and geometrical invariants.  
Chief Investigator: Prof. Thierry Pun, Co-investigator: Dr David Squire.  
Value: CHF 265K
- **1998–2000: Swiss National Science Foundation 2000–052426**  
Image archival and retrieval for multimedia databases based on exploratory statistics and geometrical invariants.  
Chief Investigator: Prof. Thierry Pun, Co-investigator: Dr David Squire.  
Value: CHF 166K

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**University Teaching and Supervision**

Supervisor of PhD, Masters and Honours students working in the fields of computer vision, multimedia retrieval and content extraction signatures, 1998-present. Three PhD, five Masters and eight honours/diplme students successfully completed, others continuing.

Lecturer, 3rd year subject *CSE3308 Software Engineering: Analysis and Design*, Monash University, 2000–2005, 2007.

Lecturer, 2nd year subject *FIT2024 Software Engineering Practice*, Monash University, 2007.

Group supervisor, 4th year subject *CSE4002 Software Engineering Studio Project*, Monash University, 2007.

Lecturer, Masters subject *CSE5230 Data Mining*, Monash University, 2000–2004.

Lecturer on  $\LaTeX$  and  $\BibTeX$ , Honours subject *CSE417 Communication and Research Skills*, Monash University, 2000–2005.

Group supervisor, 3rd year subject *CSE3200 Industrial Experience Project*, Monash University, 2000–2005.

Coach, Monash teams for ACM Programming Competition, 2000-present.

Professional development courses completed:

- SDU Working with Asian Names Workshop, November 2002
- CHED Introduction to University Teaching Workshop, December 2000

Responsible for subject *Projets Informatiques* (3rd year software engineering project), University of Geneva, 1998–1999. Assistant for the undergraduate subjects *Algorithmique* and *Structures de donnees*, University of Geneva, 1996–1998.

Resident Physics Tutor, Queen's College, The University of Melbourne, Australia, 1991–1992.

Numerous tutoring positions at The University of Melbourne in the physics, mathematics, and computer science departments, 1990–1993.

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## University Administration Experience

**2007:** Deputy Course Leader, Bachelor of Software Engineering, Monash University, Melbourne, Australia.

**2005:** Associate Head, Caulfield School of Information Technology, Monash University, Melbourne, Australia.

**2005:** Chair, Scholarships Subcommittee, Faculty of Information Technology, Monash University, Melbourne, Australia.

**2001–2004** School Postgraduate Research Coordinator (CSSE Caulfield), Monash University, Melbourne, Australia.

**2004** Member of *Decanal Structure* team for strategic review of the Faculty of Information Technology, Monash University.

**2003** Convenor of *Research Output* working group for the CSSE Five Year Plan, Monash University.

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## University Education

**1992–1995:** Doctoral student, Computer Science Department, The University of Melbourne, then School of Computing, Curtin University of Technology.

David McG. Squire, **Model-based Neural Networks for Invariant Pattern Recognition**, *Ph.D. Thesis*, School of Computing, Curtin University of Technology, Perth, Western Australia; conferred the 19th of March, 1997.

Undergraduate

Bachelor of Science (Physics), The University of Melbourne, 1987–1991.

Bachelor of Engineering (Electrical and Electronic) (First Class Honours), The University of Melbourne, 1987–1990.

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## Miscellany

### Languages

- English (mother tongue)
- French (Alliance française diplme de langue, 1997)
- Latin (Higher School Certificate)

### Sport

- Life member, Curtin University Touch Rugby Club
- First VIII Rowing Crew, Queen's College, The University of Melbourne, 1987–1990
- Coach, Men's Second VIII, Queen's College, 1992–1993

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## Contact

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Hypertext version of this CV (lots of links):

<http://www.csse.monash.edu.au/~davids/cv/>