

Robby McKilliam

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Education

Doctor of Philosophy (Electrical Engineering). University of Queensland.

Bachelor of Engineering (Computer System Engineering). Hons 1st Class.

Bachelor of Science (Mathematics).

Research and Employment History

Research assistant and lecturer	July 2010 - December 2010
School of ITEE	University of Queensland
Research assistant working under Vaughan Clarkson (http://www.itee.uq.edu.au/~vaughan/) in the field of signal processing and communications. Lecturing (half load) 4th year digital communications course, COMS4100.	

Postgraduate student	March 2007 - July 2010
School of ITEE	University of Queensland
PHD student working under Vaughan Clarkson in the field of signal processing and communications. Thesis title: <i>Lattice Theory, circular statistics and polynomial phase signals</i> . Funded by an Australian postgraduate award.	

ITEE Student Ambassador	August 2008
School of ITEE	University of Queensland
Acting as an student ambassador for the school of ITEE at a careers fair in Townsville. Talking to school leavers about career choices within electrical engineering.	

Researcher (Casual)	December 2005 - March 2007
CRC for Mining	Pinjarra Hills, Brisbane
Design and development of visualisation and dynamic simulation software for mining equipment. Rock recognition from sensor data on drilling equipment	

Tutor	February 2003 - July 2006
Department of Mathematics	University of Queensland
Teaching 1st and 2nd level calculus and linear algebra to classes of up to 30 people. MATLAB tutoring to classes of up to 30 people.	

Dishwasher	December 2001 - December 2005
Wordsmiths Cafe	University of Queensland
Dishwashing and waiting	

Theses

R. G. McKilliam. *Lattice theory, circular statistics and polynomial phase signals*. Ph.D. thesis, University of Queensland, Australia, October 2010.
Selected statements from reviewers:

The candidate, supervisors and collaborators are all to be congratulated on a really nice body of work that is clearly deserving the award of a PhD.

I consider the novel results of this thesis to be a both profound and comprehensive advance of the current state of the art. It makes substantial headway regarding the understanding of special lattices, associated nearest point algorithms, and their application to statistical estimation problems. I rate the depth and breadth of the technically highly original content as extraordinary.

Journal Publications

R. G. McKilliam, I. V. L. Clarkson, and B. G. Quinn. An algorithm to compute the nearest point in the lattice A_n^* . *IEEE Trans. Inform. Theory*, 54(9):4378-4381, Sep. 2008.

R. G. McKilliam and I. V. L. Clarkson. Identifiability and aliasing in polynomial-phase signals. *IEEE Trans. Signal Process.*, 57(11):4554-4557, Nov. 2009.

Winner: Canon Information Systems Research Australia (CiSRA) best paper prize 2009

Selected statements from reviewers:

The results presented in the manuscript are novel and interesting and deserve publication.

The paper is written very well and I recommend it for publication as is. It will be a valuable contribution to the estimation theory of polynomial phase signals.

R. G. McKilliam, W. D. Smith, and I. V. L. Clarkson. Linear-time nearest point algorithms for Coxeter lattices. *IEEE Trans. Inform. Theory*, 56(3):1015-1022, Mar. 2010.

R. G. McKilliam, B. G. Quinn, I. V. L. Clarkson and B. Moran. Frequency estimation by least squares phase-unwrapping. *IEEE Trans. Signal Process.*, 58(6):2953-2963, June 2010

Conference Publications

R. G. McKilliam, D. J. Ryan, I. V. L. Clarkson, and I. B. Collings. Block noncoherent detection of hexagonal QAM. *Proc. Australian Commun. Theory Workshop*, 2010.

R. G. McKilliam, I. V. L. Clarkson, Barry G. Quinn, and Bill Moran. Polynomial-phase estimation, phase unwrapping and the nearest lattice point problem. *Asilomar Conference on Signals, Systems, and Computers*, 2009.

R. G. McKilliam, I. V. L. Clarkson, D. J. Ryan, and I. B. Collings. Linear-time block noncoherent detection of PSK. *Proc. Internat. Conf. Acoust. Speech Signal Process.*, pages 2465-2468, April 2009.

R. G. McKilliam and I. V. L. Clarkson. Maximum-likelihood period estimation from sparse, noisy timing data. *Proc. Internat. Conf. Acoust. Speech Signal Process.*, pages 3697-3700, March 2008.

R. G. McKilliam, D. J. Ryan, I. V. L. Clarkson, and I. B. Collings. An improved algorithm for optimal noncoherent QAM detection. *Proc. Austral. Comm. Theory Workshop*, pages 64-68, Jan 2008.

R. G. McKilliam, I. V. L. Clarkson, W. D. Smith and B. G. Quinn. A linear-time nearest point algorithm for the lattice A_n^* . *International Symposium on Information Theory and its Applications*, 2008.

B. G. Quinn, R. G. McKilliam, and I. V. L. Clarkson. Maximizing the periodogram. *IEEE GLOBE-COM*, pages 1-5, Dec 2008.

R. G. McKilliam and G. Wyeth. Fast and robust stereo object recognition for spheres. *Australasian*

Conference on Robotics and Automation, 2006.

Working Papers

R. G. McKilliam, I. V. L. Clarkson, B. G. Quinn. and B. Moran. The asymptotic properties of polynomial phase estimation by least squares phase unwrapping. accepted to *Proc. Internat. Conf. Acoust. Speech Signal Process.*, 2011.

R. G. McKilliam, B. G. Quinn, I. V. L. Clarkson. Direction estimation by minimum square arc length. submitted to *IEEE Trans. Signal Process.*, Mar. 2011.

Reviewing

IEEE Transactions on Information Theory

IEEE Transactions on Signal Processing

IEEE Signal Processing Letters

IEEE Communications Magazine

IEEE Vehicular Technology Conference (VTC)

Conference of the IEEE Industrial Electronics Society (IECON)

Mathematical Reviews (American Mathematical Society)

Awards

Australian postgraduate award (APA)

CSIRO Research Scholarship

Canon Information Systems Research Australia (CSIRA) best paper prize 2009

Maude Walker Scholarship 2007

Interests

Skiing, swimming, math, motorbikes, video games and good coffee.

Referees

Dr Vaughan Clarkson

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Prof Barry Quinn

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