Curriculum Vitae of Robert Kerr

PERSONAL DETAILS

Name:	Robert Kerr
Date of Birth:	19/04/1987
Phone Number:	0431 587 997
Postal Address:	5/214 Argyle St, Fitzroy, Melbourne, VIC, 3065
Email Address:	robrkerr@gmail.com
Citizenship:	Australian Citizen

TERTIARY EDUCATION

PhD in Computational Neuroscience

The University of Melbourne
July 2010 to January 2014
Department of Electrical & Electronic Engineering
Thesis Title:
"Mathematical Modelling of Brain Networks: From Synaptic Plasticity to Behaviour"
Supervisors:
- Prof. Anthony N. Burkitt,
- A/Prof. David B. Grayden,
- Prof. Doreen A. Thomas

Dual Bachelor of Engineering and Science

The University of Queensland
Feb 2005 to Nov 2009

BE Major:	Mechanical Engineering
BSc Major:	Mathematics
GPA:	6.98 (1 is lowest, 7 is highest)

AWARDS / SCHOLARSHIPS

- CNS 2013 Best Student Poster Award in July 2013
- OCNS Travel Award to attend CNS in July 2013
- Melbourne Abroad Travelling Scholarship (MATS) for travel to CNS and RIKEN in July 2012
- OCNS Travel Award to attend CNS in July 2012
- Australian Postgraduate Award (APA) Scholarship at the University of Melbourne beginning July 2010
- Winner of one of 'The James Dowrie Memorial Prizes' in 2008 from the University of Queensland.
- Winner of 'The Alfred Henry Darker Scholarship' in 2008 from the University of Queensland.
- Nominee for the 'Steve Golding Award for Innovation and/or Management Award' in 2008 organised by Engineers Australia.
- Australian Students' Prize for Excellence in 2004 from the Australian Federal Government.

PUBLICATIONS

Refereed Journal Articles

- Kerr RR, Grayden DB, Thomas DA, Gilson M, and Burkitt AN (2014). "Goal-directed control with cortical units that are gated by both top-down feedback and oscillatory coherence." Front. Neural Circuits, 8:94.
- Kerr RR, Grayden DB, Thomas DA, Gilson M, and Burkitt AN (2014). "Coexistence of Reward and Unsupervised Learning during the Operant Conditioning of Neural Firing Rates." PLoS ONE, 9(1): e87123.
- Kerr RR, Burkitt AN, Thomas DA, Gilson M, and Grayden DB (2013). "Delay Selection by Spike-Timing-Dependent Plasticity in Recurrent Networks of Spiking Neurons Receiving Oscillatory Inputs." PLoS Comput Biol, 9(2): e1002897.

Refereed Abstracts

- Kerr RR, Grayden DB, Thomas DA, Gilson M, and Burkitt AN (2014). "Goal-directed control with cortical units that are gated by both top-down feedback and oscillatory coherence." CNS*2014 Computational Neuroscience Meeting, BMC Neuroscience, 15(Suppl 1): P197.
- Kerr RR, Grayden DB, Thomas DA, Gilson M, and Burkitt AN (2013). "Generalized reward-modulated STDP: a model of operant conditioning of cortical neurons." Cosyne Abstracts 2013, I-91, Salt Lake City USA.
- Kerr RR, Grayden DB, Thomas DA, Gilson M, and Burkitt AN (2013). "Requirements for the robust operant conditioning of neural firing rates." CNS*2013 Computational Neuroscience Meeting, BMC Neuroscience, 14(Suppl 1): P48.
- Kerr RR, Burkitt AN, Thomas DA, and Grayden DB (2012). "STDP encodes oscillation frequencies in the connections of recurrent networks of spiking neurons." CNS*2012 Computational Neuroscience Meeting, BMC Neuroscience, 13(Suppl 1): P130.

CONFERENCES / INVITED SEMINARS

International Conference: RejectJS

5th Annual JavaScript Conference
Sept 24, 2015; Berlin, Germany
Oral presentation

Local Conference: Decompress

Local Web Development Community Day
March 28, 2015; Melbourne, Australia
Oral presentation

Local Meetup: MelbJS

Monthly JavaScript Meetup
July 8, 2015; Melbourne, Australia
Oral presentation

National Conference: AWCN 2014

7th Aust. Workshop on Computational Neuroscience
Feb 2-3, 2014; Adelaide, Australia
Oral presentation

National Symposium: Bionics Institute

Neural prostheses: brain plasticity & neural modulation
Dec 13, 2013; Melbourne, Australia
Invited oral presentation

International Conference: CNS 2013

22nd Computational Neuroscience Conference
July 13-18, 2013; Paris, France
Poster presentation (awarded prize)
Invited oral presentation at "Advances in Activity-Dependent Synaptic Plasticity" workshop

International Conference: COSYNE 2013

10th Computational and Systems Neuroscience Meeting
Feb 28 - Mar 5, 2013; Salt Lake City, Utah, USA
Poster presentation

National Conference: ANS 2013

33rd Meeting of the Australian Neuroscience Society
Feb 3-6, 2013; Melbourne, Australia (National)
Poster presentation

National Conference: AWCN 2013

6th Aust. Workshop on Computational Neuroscience
Jan 30-31, 2013; Melbourne, Australia (National)
Poster presentation (awarded prize)

National Conference: SOBR 2012

2nd Students of Brain Research Annual Symposium
Nov 2, 2012; Melbourne, Australia (National)
Poster presentation (awarded prize)

International Conference: CNS 2012

21st Computational Neuroscience Conference
July 21-26, 2012; Atlanta, Georgia, USA
Poster presentation (awarded prize)

International Seminar: RIKEN BSI

Laboratory for Neural Circuit Theory,
RIKEN Brain Science Institute
June 29, 2012; Saitama, Japan
Lab Head: Prof. Tomoki Fukai
Hosted by: Dr Matthieu Gilson

National Conference: AWCN 2011

5th Aust. Workshop on Computational Neuroscience
Dec 13-14, 2011; Sydney, Australia
Oral presentation

TEACHING HISTORY

Postgraduate: Neural Information Processing

The University of Melbourne (BMEN90002)
Sem. 2, 2015: Lecturer ($\sim$30 class size)

Postgraduate: Neural Information Processing

The University of Melbourne (BMEN90002)
Sem. 2, 2014: Lecturer ($\sim$30 class size)

Postgraduate: Probability and Random Models

The University of Melbourne (ELEN90054)
Sem. 1, 2012: Demonstrator ($\sim$20 class size + marking)
Sem. 1, 2011: Tutor ($\sim$50 class size)

Undergraduate: Engineering Mathematics

The University of Melbourne (MAST20029)
Sem. 1, 2011: Demonstrator ($\sim$20 class size + marking)

Undergraduate: Mathematical Biology

The University of Queensland (MATH3104)
Sem. 1, 2010: Tutor ($\sim$20 class size shared between 3)
Performed marking and helped to develop the tutorials

Undergraduate: Mechanical Systems Design

The University of Queensland (MECH3100)
Sem. 2, 2008: Tutor ($\sim$50 class size shared between 3)

Undergraduate: Engineering Thermodynamics

The University of Queensland (ENGG1050)
Sem. 1, 2008: Tutor ($\sim$20 class size + marking)
Sem. 1, 2007: Tutor ($\sim$20 class size + marking)

EMPLOYMENT HISTORY

IBM Research Australia

Carlton, Melbourne – research.ibm.com/labs/australia/
February 2014 to present (full-time)
Post Doctoral Researcher, working on:
- Modelling of dendritic spines and synaptic plasticity in the cerebral cortex;
- Collaboration with university researchers on computational neuroscience projects;
- Development of cloud computing capabilities and tools, focused on modelling and analytics.

Queensland Brain Institute

The University of Queensland – cns.qbi.uq.edu.au
June 2009 to June 2010 (casual and full-time)
Research Assistant in the Computational Neuroscience Laboratory, working on:
- Development of image processing algorithms for extracting axonal growth cone shape from phase contrast microscope images;
- Investigation of methods for quantifying shapes.

Veitch Lister Consulting

Toowong, Brisbane – veitchlister.com.au
March 2007 to May 2009 (casual and full-time)
Undergraduate Engineer in the Research and Development Team, working on:
- Development of automated reporting of transport model results and of automated exporting of transport model data;
- Production of documentation and training aids for transport modelling processes;
- Part of a team developing a reach and frequency model to predict people's travel patterns;
- Undergraduate industry project modelling traffic flow.

REFEREE HISTORY

- Refereed a manuscript submitted to Neural Computation (Sept 2012)

REFERENCES

Dr. John Wagner

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IBM Research Australia
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Prof. Anthony Burkitt

Director of Bionic Vision Australia
The University of Melbourne
Phone: (03) 9035 3552
Email: aburkitt@unimelb.edu.au

Prof. David Grayden

D. Head of Dept. of Electrical & Electronic Engineering
The University of Melbourne
Phone: (03) 9035 3796
Email: grayden@unimelb.edu.au

Prof. Doreen Thomas

Head of Department of Mechanical Engineering
The University of Melbourne
Phone: (03) 8344 6663
Email: doreen.thomas@unimelb.edu.au

Prof. Geoff Goodhill

Computational Neuroscience Lab Leader
Queensland Brain Institute
Phone: (07) 3346 6431
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Tim Veitch

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