

**Curriculum Vitae**  
**Professor David B. Grayden**  
**20 January 2020**

**Address**

Department of Biomedical Engineering  
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**Qualifications**

1999: PhD in Electrical and Electronic Engineering, The University of Melbourne.  
1991: BSc in Computer Science, The University of Melbourne.  
1990: BE (Hons) in Electrical and Electronic Engineering, The University of Melbourne.

**Academic Appointments**

**Current**

May 2019 – : Professor and Clifford Chair of Neural Engineering, Dept of Biomedical Engineering and Graeme Clark Institute for Biomedical Engineering, The University of Melbourne  
Jun 2012: Honorary Clinical Research Fellow, Dept of Neurology, St. Vincent's Hospital Melbourne, Fitzroy.  
Aug 2006: Honorary Senior Research Fellow, The Bionics Institute, 384-388 Albert Street, East Melbourne.

**Previous**

Feb 2017 – May 2019: Professor and Head, Dept of Biomedical Engineering, The University of Melbourne.  
Jan 2015 – Feb 2017: Professor, Dept of Electrical & Electronic Engineering, The University of Melbourne.  
Feb 2016 – Dec 2016: Deputy Head (Academic), Dept of Electrical & Electronic Engineering, The University of Melbourne.  
Jan 2013 – Dec 2015: Director, Biomedical Engineering, Melbourne School of Engineering, The University of Melbourne.  
Jun 2012 – May 2015: Adjunct Associate Research Professor, Institute for Telecommunications Research, University of South Australia.  
Jan 2011 – Dec 2012: Deputy Head (Academic), Dept of Electrical & Electronic Engineering, The University of Melbourne.  
Jan 2011 – Dec 2014: Associate Professor and Reader, Dept of Electrical & Electronic Engineering, The University of Melbourne.  
Apr 2005 – Apr 2011: Adjunct Senior Lecturer, School of Psychological Science, Faculty of Science, Technology and Engineering, La Trobe University.

- Sep 2006 – Dec 2010: Senior Lecturer, Dept of Electrical & Electronic Engineering, The University of Melbourne.
- Dec 2004 – Sep 2006: Senior Research Fellow, Human Communications Research Centre, The Bionic Ear Institute, 384-388 Albert Street, East Melbourne.
- Mar 2004 – Sep 2006: Honorary Fellow, Faculty of Engineering, The University of Melbourne.
- Feb 1997 – Dec 2004: Research Fellow, Human Communications Research Centre, The Bionic Ear Institute, 384-388 Albert Street, East Melbourne.
- Feb 1996 – Feb 1997: Lecturer, Dept of Electrical and Electronic Engineering, The University of Melbourne.

### Major Research Project Grants

1. 2020 – 2022: ARC Discovery Project Grant (DP200102600), D.B Grayden, P. Karoly, L. Kuhlmann, M.J. Cook, *Creating subject-specific mathematical models to understand the brain*, three year project, \$420,000.
2. 2019 – 2021: NHMRC Project Grant (1158912), **D.B. Grayden**, S.E. John, N. Opie, T. Oxley, D.R. Freestone, *Minimally invasive endovascular neural stimulation*, three year project, \$697,802.20.
3. 2018 – 2020: ARC Linkage Project Grant (LP170101162), A.N. Burkitt, **D.B. Grayden**, T. Kameneva, H. Meffin, *Targeting electrical stimulation of neural tissue*, two year project, \$196,570.
4. 2018 – 2021: NHMRC Project Grant (1148005), D.R. Freestone, **D.B. Grayden**, S.E. John, T. Oxley, M.J. Cook, D. Ackland, Y. Wong, *Control of prosthetic limbs from decoded brain signals*, four year project, \$883,464.
5. 2017 – 2022: ARC Industrial Transformation Training Centres (IC170100030), T. Baldwin, D. Freestone, **D.B. Grayden**, et al. (25 investigators), *ARC Training Centre in Cognitive Computing for Medical Technologies*, five year project, \$4,133,659 (plus \$1,500,000 industry cash funding).
6. 2017 – 2019: USA Dept. of the Army - USAMRAA, N.L. Opie, T. Oxley, A.N. Burkitt, S. Davis, **D.B. Grayden**, C. May, P.J. Mitchell, T. O'Brien, G.S. Rind, S. John, S.M. Ronayne, *Returning wounded soldiers: direct brain control of exoskeletons and vehicles*, three year project, \$1,508,022.
7. 2017 – 2019: NHMRC Project Grant (1130468), M. J. Cook, **D.B. Grayden**, L. Kuhlmann, D.R. Freestone, W. D'Souza, A.N. Burkitt, *Critical slowing in epilepsy*, three year project, \$474,948.00.
8. 2017 – 2018: National Foundation for Medical Research and Innovation, N.L. Opie, T. Oxley, T. O'Brien, **D.B. Grayden**, C. May, A.N. Burkitt, P.J. Mitchell, S. John, G.S. Rind, S.M. Ronayne, *Clinical translation of an endovascular brain machine interface*, two year project, \$390,000.
9. 2016 – 2018: NHMRC Project Grant (1106390), M. Ibbotson, S. Cloherty, T. Kameneva, H. Meffin, **D.B. Grayden**, A.N. Burkitt, *Neuro-feedback for improved efficacy of retinal prostheses*, three year project, \$653,655.20.
10. 2015 – 2019: Defence Advanced Research Project Agency (DARPA-15-06-ElectRx-FP-003, Contract No. N66001-15-2-4060), J. Furness, R. Shepherd, R. McAllen, **D.B. Grayden**, R. Jones, *Vagal neuromodulation for the treatment of inflammatory bowel disease*, four year project, \$6,000,000.

11. 2014 – 2018: NHMRC Project Grant (1062532), T. Oxley, A.N. Burkitt, S. Davis, **D.B. Grayden**, P. Mitchell, M. Horne, N. Opie, *Next generation brain-machine interface: Minimally-invasive endovascular stent-electrode array for robotic limb control*, five year project, \$1,651,686.
12. 2014 – 2016: NHMRC Development Grant (1075117), T. Oxley, A.N. Burkitt, T. O'Brien, **D.B. Grayden**, S. Davis, N. Opie, J. Harcourt, *Developing a prototype of a next generation brain computer interface*, three year project, \$810,382.
13. 2014 – 2016: ARC Discovery Project Grant (DP140101520), **D.B. Grayden**, *Computational neural modelling of bottom-up information and top-down attention in auditory perception*, three year project, \$360,000.
14. 2014 – 2016: NHMRC Project Grant (1065638), M.J. Cook, **D.B. Grayden**, A.N. Burkitt, L. Kuhlmann, D.R. Freestone, *Advanced epileptic seizure warning methods*, three year project, \$410,179.
15. 2014 – 2016: NHMRC Development Grant (1075347), C. Williams, M.J. Cook, P. Seligman, **D.B. Grayden**, *Black out advisory system – development of an implantable sub-scalp seizure monitor*, three year project, \$840,715.
16. 2013 – 2015: NHMRC Project Grant (1048360), M.J. Cook, **D.B. Grayden**, D. Nestic, H. McDermott, *Monitoring cortical excitability using a probing stimulus for epileptic seizure anticipation*, three year project, \$380,360.
17. 2012 – 2014: NHMRC Project Grant (1026367), M.J. Cook, **D.B. Grayden**, L. Johnston, C. Plummer, *Non-invasive methods for localising epileptic brain activity*, three year project, \$642,350.
18. 2012 – 2014: NHMRC Project Grant (1032042), S. Wilson, N. McLachlan, **D.B. Grayden**, *Signals and noise: A study of the neurocognitive mechanisms underpinning habituation to noise in normal and damaged hearing*, three year project, \$394,820.
19. 2012 – 2015: Defence Advanced Research Project Agency (DARPA BAA 10 35, Contract No. N66001-12-1-4045), T. Oxley, T. O'Brien, C. French, G. Rind, N. Opie, A.N. Burkitt, **D.B. Grayden**, B. Yan, P. Mitchell, D. Howells, C. May, M. McKinley, *Endoluminal neural vascular interface project*, three year project, \$1,331,325.
20. 2011 – 2013: ARC Linkage Project Grant (LP100200571), **D.B. Grayden**, D. Nestic, M.J. Cook, *Optimisation of signal processing and electrical stimulation algorithms for the abatement of epileptic seizures*, three year project, \$265,000.
21. 2010 – 2012: ARC Discovery Project Grant (DP1094830), **D.B. Grayden**, *Bio inspired speech analysis: Specialised information processing of vocalisations in the auditory brainstem*, three year project, \$180,000.
22. 2010 – 2012: ARC Discovery Project Grant (DP1096699), J. Manton, **D.B. Grayden**, *Understanding cortical processing: Neuronal activity and learning in recurrently connected networks*, three year project, \$185,000.
23. 2010 – 2012: NHMRC Development Grant (1000764), M.J. Cook, P. Blamey, C. Williams, A.N. Burkitt, **D.B. Grayden**, *Development of an ambulatory epilepsy treatment device*, two year project, \$415,700.
24. 2008 – 2011: ARC Linkage Project Grant (LP0884029), **D.B. Grayden**, H.J. McDermott, J.M. Heasman, T. Lenarz, A. Buechner, *Individualized cochlear implant sound coding: Optimized algorithms for better hearing*, three year project, \$270,000.
25. 2007 – 2009: ARC Discovery Project Grant (DP0771815), A.N. Burkitt, **D.B. Grayden**, *Temporal pattern learning and recognition in neural systems*, three year project, \$225,000.

26. 2005 – 2008: ARC Linkage Project Grant (LP0560684), I.M. Mareels, M. Kuijper, A.N. Burkitt, M.J. Cook, **D.B. Grayden**, *Prediction of epilepsy seizure onset using nonlinear analysis of EEG recordings*, four year project, \$457,633.
27. 2004 – 2006: ARC Discovery Project Grant (DP0453205), A.N. Burkitt, **D.B. Grayden**, *Adaptive learning in networks of spiking neurons for recognising patterns that change with time*, three year project, \$150,000.
28. 2003 – 2004: NHMRC Development Grant (248500), **D.B. Grayden**, O.P. Kenny, R.C. Dowell, G.M. Clark, *Development and evaluation of a new cochlear implant sound processing strategy that mimics the behaviour of the inner ear and auditory nerve*, one year project, \$98,000.
29. 2002: ARC Discovery Project Grant (DP0211972), A.N. Burkitt, **D.B. Grayden**, *Adaptive learning of spatiotemporal patterns: Development of multi-layer spiking neuron networks using Hebbian and competitive learning*, one year project, \$50,000.

### Peer Reviewed Research Centres

30. 2013: National eResearch Collaboration Tools and Resources (NeCTAR), D. Burnham *et al.*, *VL222: Above and beyond speech, language and music: A virtual lab for human communication science (HCS vLab)*, one year virtual laboratory program grant, \$1,408,829.
31. 2010 – 2011: ARC Linkage Infrastructure, Equipment and Facilities Grant (LE100100211), D. Burnham *et al.*, *The big Australian speech corpus: An audio-visual speech corpus of Australian English*, two year infrastructure funding, \$650,000.
32. 2004 – 2009: ARC Research Network (RN0460284), R. Dale *et al.*, *Enabling Human Communication: Tough problems in human communication with bold but informed solutions drawing on sound, speech, and language research capabilities*, five year network funding, \$2,000,000. Member of External Liaison Working Group.

### Other Research Grants

33. 2020: Michael Hirshorn Medical Research Commercialisation Fund, The University of Melbourne, B. Bui, L. Ayton, Sam John, A. Morokoff, **D.B. Grayden**, *Ophthalmodynamometry: Using the eye to measure the brain*, one year project, \$30,000.
34. 2020 – 2021: CIBF Strategic Initiative Project Grant, M. Garrido, A.N. Burkitt, D.B. Grayden, S. Lin, G. Barnes, P. Sowman, W. Woods, *New generation magnetoencephalography: imaging the brain with non-invasive wearable quantum devices*, two year project, \$85,800.
35. 2018: Victorian Medical Research Acceleration Fund, **D.B. Grayden**, S.E. John, T. Oxley, N. Opie, C May, *Helping people suffering from paralysis due to brain diseases such as epilepsy, Parkinson's and depression*, one year project, \$100,000 (plus \$100,000 internal funding).
36. 2017: Interdisciplinary Seed Funding, Melbourne Neuroscience Institute, D. Freestone, M. Cook, **D.B. Grayden**, S. Harrer, S. John, D. Ackland, T. O'Brien, Y.T. Wong, T. Oxley, *Using decoded brain signals to control prosthetic limbs*, one year project, \$20,000.
37. 2016: Interdisciplinary Seed Funding, Melbourne Neuroscience Institute, L. Johnston, T. Merson, **D.B. Grayden**, S. Petrou, *Synchronised conduction along myelinated axons is optimised by populations of interconnected activity-responsive oligodendrocytes*, one year project, \$26,000.
38. 2015: International Research and Research Training Fund (IRRTF), The University of Melbourne, M.J. Cook, **D.B. Grayden**, L. Kuhlmann, *IWSP7 Satellite Meeting on Australian-German Epilepsy Research Collaboration*, one year project, \$15,000.

39. 2014 – 2015: Defence Health Foundation, T. Oxley, T. O'Brien, **D.B. Grayden**, N. Opie, *Signal processing for novel brain-machine interface for robotic limb control*, two year project, \$154,823.
40. 2014: Interdisciplinary Seed Funding, Melbourne Neuroscience Institute, **D.B. Grayden**, E. Burrows, A. Hannan, N. McLachlan, *Deciphering the language of mice*, one year project, \$30,000.
41. 2013: Interdisciplinary Seed Funding, Melbourne Materials Institute, N. Opie, T. Oxley, T. O'Brien, C. French, C. May, A.N. Burkitt, **D.B. Grayden**, S. Praver, D. Garrett, *Investigating Nitinol properties in electrode fabrication*, one year project, \$30,000.
42. 2013: International Research and Research Training Fund (IRRTF), The University of Melbourne, M.J. Cook, **D.B. Grayden**, L. Kuhlmann, *Satellite Workshop to the International Workshop on Seizure Prediction*, one year project, \$9,438.
43. 2013: Interdisciplinary Seed Funding, Melbourne Materials Institute, C. Hales, **D.B. Grayden**, K. Ganesan, P. Kitchener, A. Nirmalathas, B. Gouhier, L. Hollenberg, *A novel neuroscience-inspired many-state logic element for artificial brain tissue replication and low power, massively parallel information processing, sensing and control*, one year project, \$30,000.
44. 2012: Interdisciplinary Seed Funding, Melbourne Neuroscience Institute, A.N. Burkitt, N. McLachlan, **D.B. Grayden**, *Speech from Noise: A new algorithm based on brain stem neural mechanisms*, one year project, \$25,000.
45. 2011: Interdisciplinary Seed Funding, Melbourne Neuroscience Institute, The University of Melbourne, **D.B. Grayden**, M. Cook, J. Manton, W. D'Souza, *Anticipation of epileptic seizures using electrical probing of the cortex*, one year project, \$50,000.
46. 2011: Interdisciplinary Seed Funding, The University of Melbourne, S. Bird, **D.B. Grayden**, S. Howard, D. Little, N. Thieberger, S. Treloyn, S. Cutfield, M. Liberman *TELIA: Technology for endangered languages in Australasia*, one year project, \$40,000.
47. 2011: Interdisciplinary Seed Funding, The University of Melbourne, A.N. Burkitt, **D.B. Grayden**, J. Wagner, L. Johnston, M. Cook, J. Haueisen, *Electromagnetic brain imaging using parallelised finite element models in epilepsy*, one year project, \$35,000.
48. 2009-2010: The Cassidy Bequest Gift Fund, Perpetual Trustee Company Ltd, **D.B. Grayden**, *Automated methods to warn epilepsy sufferers*, one year project, \$9,000.
49. 2009: Melbourne Research Grants Scheme 2009, The University of Melbourne, **D.B. Grayden**, *Specialised information processing of vocalisations in the auditory brainstem*, one year project, \$34,809.
50. 2009: Victorian Foundation for the Promotion of Oral Education of the Deaf, ANZ Trustees, **D.B. Grayden**, *Auditory, visual and multisensory processing in children with cochlear implants*, one year project, \$4,000.
51. 2008 – 2009: Joint Research Project - Visiting Scholar Award, The University of Melbourne, M.J. Cook, L. Kuhlmann, A.N. Burkitt, **D.B. Grayden**, J. Haueisen, *EEG-based localisation of seizure-like activity in the epileptic brain*, one year project, \$15,000.
52. 2008 – 2009: Helen Macpherson Smith Trust Project Grant, M.J. Cook, **D.B. Grayden**, L. Kuhlmann L Johnston, *Extending communication for patients with post-coma unresponsiveness*, one year project, \$47,200.
53. 2006-2007: Trust Company of Australia Limited, **D.B. Grayden**, *Better hearing for children with bionic ears and hearing aids*, two year project, \$10,000.
54. 2005 – 2006: Helen Macpherson Smith Trust Project Grant, **D.B. Grayden**, *Better hearing for deaf people using the Bionic Ear*, one year project, \$126,470.

55. 1999 – 2002: Collaborative Research Project between Telstra Research Laboratories and The Bionic Ear Institute, G.M. Clark *et al.*, *An improved “front-end” for automatic speech recognition in telecommunications and advanced hearing devices for deaf children and adults*, three year project, \$450,000.

### **Awards and Prizes**

- 2020-2021: EMBS Distinguished Lecturer, Engineering in Medicine and Biology Society (EMBS), Institute of Electrical & Electronic Engineers (IEEE)
- 2019: Melbourne School of Engineering Award for Outstanding Graduate Researcher Supervision, The University of Melbourne.
- 2019: UNSW Eureka Prize for Excellence in Interdisciplinary Scientific Research, The University of Melbourne, N. Opie, T. Oxley, G. Rind, S. Ronayne, P. Yoo, A. Meltzer, A. Burkitt, S. John, D. Grayden, C. May, P. Mitchell, A. Morokoff, B. Campbell, C. Bird.
- 2019: Award for Excellence in Team-Based Research, The University of Melbourne, N. Opie, T. Oxley, G. Rind, S. Ronayne, P. Yoo, A. Meltzer, A. Burkitt, S. John, D. Grayden, C. May, P. Mitchell, A. Morokoff, B. Campbell, C. Bird.
- 2017: Most Innovative Academic, Melbourne School of Engineering, The University of Melbourne.
- 2014: NHMRC “10 of the Best” Projects for 2014 for the NHMRC Development Grant project, “Prototype medical device for the automatic detection and suppression of epileptic seizures and ex vivo studies in humans”, CIs M.J. Cook, P. Blamey, C. Williams, A.N. Burkitt, D.B. Grayden.
- 2006: American Speech-Language-Hearing Association 2006 Editors Award for the article of highest merit in the Journal of Speech, Language and Hearing Research in the area of hearing.
- 1994: Australian Telecommunications & Electronic Research Board (ATERB) Travel Scholarship to the IEEE International Conference on Acoustics, Speech and Signal Processing, ICASSP-94, Adelaide, South Australia.
- 1994: Australian Telecommunications & Electronic Research Board (ATERB) Travel Scholarship to the Fifth Australian International Conference on Speech Science and Technology, SST-94, Perth, Western Australia.
- 1991: Australian Computer Society Student Award, The University of Melbourne.
- 1990: Rowden White Prize for Engineering, The University of Melbourne.
- 1990: L.R. East Prize in Engineering, The University of Melbourne.
- 1990: Dixon Scholarship in Electrical and Electronic Engineering, The University of Melbourne.
- 1989: IBM Prize for Electrical & Electronic Engineering in Bachelor of Engineering (Electrical), The University of Melbourne.
- 1988: Second Year Siemens Prize for Achievement in Bachelor of Engineering (Electrical), The University of Melbourne.

### **Scholarships**

- 1992 – 1996: Australian Postgraduate Research Award (Priority), The University of Melbourne.
- 1992 – 1996: Telstra Research Laboratories Postgraduate Student Fellowship
- 1992: OTC Telecommunications Postgraduate Student Award

## Research Supervision

### Current

1. Dr Aditya Tarigoppula (2019-), Research Fellow, Dept of Biomedical Engineering, Supervisor, Funding source: ARC Training Centre in Cognitive Computing for Medical Technologies.
2. Dr Parvin Zarei Eskikand (2019-), Research Fellow, Dept of Biomedical Engineering, Supervisor, Funding source: ARC Training Centre in Cognitive Computing for Medical Technologies.
3. Dr Xiao (Demi) Gao (2019-), McKenzie Research Fellow, Dept of Biomedical Engineering, Supervisor, Funding source: McKenzie Fellowship.
4. Dr Jordan Chambers (2019-), Research Fellow, Dept of Biomedical Engineering, Supervisor, Funding source: ARC Training Centre in Cognitive Computing for Medical Technologies.

### Past

1. Dr Artemio Soto-Breceda (2019), Research Fellow, Dept of Biomedical Engineering, Supervisor, Funding source: DARPA Project DARPA-15-06-ElectRx-FP-003.
2. Dr Sam John (2013-2019), Research Fellow, Dept of Biomedical Engineering, Supervisor, Funding source: NHMRC Project Grant 1062532, Defence Health Foundation.
3. Dr Catherine Davey (2018-2019), Research Fellow, Dept of Biomedical Engineering, Supervisor, Funding source: DARPA Project DARPA-15-06-ElectRx-FP-003.
4. Dr Jordan Chambers (2014-2018), Research Fellow, Dept of Biomedical Engineering, Supervisor, Funding source: ARC Project Grant DP140101520.
5. Dr Elma O'Sullivan-Greene (2012-2017), Lecturer, Dept of Biomedical Engineering, Supervisor, Funding source: DARPA Project DARPA-15-06-ElectRx-FP-003.
6. Dr Tatiana Kameneva (2010-2017), ARC DECRA Research Fellow, Dept of Biomedical Engineering. Funding sources: Bionic Vision Australia, ARC Discovery Early Career Researcher Award, DARPA Project DARPA-15-06-ElectRx-FP-003.
7. Dr Farhad Goodarzy (2014-2016), Research Fellow, Dept of Electrical & Electronic Engineering, Supervisor, Funding source: NHMRC Project Grant 1048360.
8. Dr Alan Lai (2013-2015), Research Fellow, Dept of Electrical & Electronic Engineering, Supervisor, Funding source: NHMRC Project Grant 1048360.
9. Dr Levin Kuhlmann (2006-2014), Research Fellow, Dept of Electrical & Electronic Engineering, Supervisor. Funding sources: ARC Linkage Project Grant LP0560684; ARC Discovery Project Grant DP1096699; NHMRC Project Grant 1023637.
10. Dr Dean Freestone (2011-2013), Department of Electrical and Electronic Engineering, Supervisor. Funding sources: ARC Linkage Project Grant LP100200571; NHMRC Project Grant 1065638.
11. Timothy Esler (2013), Research Assistant, Dept of Electrical & Electronic Engineering, Supervisor. Funding source: ARC Discovery Project Grant DP1094830.
12. Dr Fabiano Baroni (2010-2012), Research Fellow, Dept of Electrical & Electronic Engineering, Supervisor. Funding sources: ARC Discovery Project Grants DP1094830 and DP1096699.
13. Dr Emily O'Brien (2012), Research Fellow, Dept of Electrical & Electronic Engineering, Co-Supervisor (with Prof A.N. Burkitt, Dr H. Meffin). Funding source: Bionic Vision Australia.
14. Dr Craig Savage (2010-2012), Research Fellow, Dept of Electrical & Electronic Engineering, , Co-Supervisor (with Prof A.N. Burkitt, Dr H. Meffin). Funding source: Bionic Vision Australia.

15. Dr Andrea Varsavsky (2010-2012), Research Fellow, Dept of Electrical & Electronic Engineering, Supervisor. Funding source: ARC Linkage Project Grants LP0884029.
16. Dr Radwa Badawy (2011), Research Fellow, Dept of Electrical & Electronic Engineering, Supervisor. Funding source: Melbourne Neuroscience Institute Seed Funding Grant.
17. Dr Lawrence Cohen (2008-2010), Senior Research Fellow, Dept of Electrical & Electronic Engineering, Co-Supervisor (with Dr A.N. Burkitt). Funding source: ARC Linkage Project Grant LP0884029.
18. Michael Eager (2009-2010), Research Assistant, Dept of Electrical & Electronic Engineering. Funding source: Melbourne Research Grants Scheme 2009.
19. Jasmine Mar (2006-2008), Audiologist, The Bionic Ear Institute, Co-Supervisor (with Dr A.N. Burkitt). Funding source: Helen Macpherson Smith Trust & Victorian Lions Foundation.
20. William Kentler (2006-2008, 2011-2012), Research Assistant, The Bionic Ear Institute, Co-Supervisor (with Dr A.N. Burkitt). Funding source: Victorian Lions Foundation. Research Assistant, Dept of Electrical & Electronic Engineering, Supervisor. Funding source: ARC Linkage Project Grant LP0884029
21. Dr Sean Byrnes (2006-2009), Research Assistant, The Bionic Ear Institute, Co-Supervisor (with Dr A.N. Burkitt). Funding source: ARC Discovery Project Grant DP0453205.
22. Michelle Blom (2006-2007), UROP Student, The Bionic Ear Institute, Co-Supervisor (with Dr A.N. Burkitt). Funding source: Trust Company of Australia Limited.
23. William Kentler (2005-2006), Industry-Based Learning Student, The Bionic Ear Institute, Supervisor. Funding source: Helen Macpherson Smith Trust.
24. Dr Hamish Meffin (2002-2005), Research Assistant, The Bionic Ear Institute, Co-Supervisor (with Dr A.N. Burkitt). Funding sources: ARC Discovery Project Grants DP0211972 and DP0453205.
25. Sylvia Tari (2000-2001), Audiologist, The Bionic Ear Institute, Supervisor. Funding source: Sidney Myer Foundation.

## **Student Supervision**

### **Completed PhD Students – Principal Supervisor**

1. Giulia Gerboni (2019), Department of Biomedical Engineering, University of Melbourne, Principal Supervisor (Panel of 3). Thesis title: *Stent-based endovascular neural interface: Characterization of recording and stimulating properties.*
2. Philippa Karoly (2019), Department of Biomedical Engineering, University of Melbourne, Principal Supervisor (Panel of 3). Thesis title: *Seizure prediction: stochastic estimation for large scale neural models.*
3. Ewan Nurse (2018), Department of Biomedical Engineering, University of Melbourne, Principal supervisor (Panel of 4). Thesis title: *Decoding upper limb kinematics from electrocorticography.*
4. Milad Faizollah (2018), Department of Biomedical Engineering, University of Melbourne, Principal supervisor (Panel of 2). Thesis title: *Low power transmitter for implanted bio-devices.*
5. Chi Lik Warwick Cheung (2017), Department of Biomedical Engineering, University of Melbourne, Principal Supervisor (Panel of 4). Thesis title: *Probing cortical excitability in epileptogenesis.*
6. Kerry Halupka (2017), Department of Biomedical Engineering, University of Melbourne, Principal Supervisor (Panel of 5). Thesis title: *Prediction and shaping of visual cortex activity for retinal prostheses.*



7. Jeffrey Spencer (2017), Department of Biomedical Engineering, University of Melbourne, Principal Supervisor (Panel of 2). Thesis title: *A neurobiologically plausible computational model of sound and speech recognition.*
8. Parvin Zarei Eskikand (2017), Department of Biomedical Engineering, University of Melbourne, Principal Supervisor (Panel of 4). Thesis title: *Computational models of V1 and MT neurons for estimation of visual motion direction.*
9. Amirhossein Jafarian (2016), Department of Electrical and Electronic Engineering, University of Melbourne, Principal Supervisor (Panel of 3). Thesis title: *Patient-specific neural mass modelling of focal seizures.*
10. Matias Maturana (2016), Department of Electrical and Electronic Engineering, University of Melbourne, Principal Supervisor (Panel of 3). Thesis title: *Modelling retinal ganglion cells.*
11. Stephan Lau (2015), Department of Electrical and Electronic Engineering, University of Melbourne, and Technical University of Illmenau, Germany, Principal Supervisor (Panel of 4). Thesis title: *Validation of electromagnetic finite element models for localising brain activity: controlled and epileptic sources.*
12. Nafise (Nina) Erfanian-Saeedi (2015), Department of Electrical and Electronic Engineering, University of Melbourne, Principal Supervisor (Panel of 3). Thesis title: *Neural network model of auditory perception.*
13. F. Isabell Kiral-Kornek (2015), Department of Electrical and Electronic Engineering, University of Melbourne, Principal Supervisor (Panel of 3). Thesis title: *Enhancing visual perception with retinal prostheses: A simulation study embracing phosphene irregularities.*
14. Susmita Saha (2015), Department of Electrical and Electronic Engineering, University of Melbourne, Principal Supervisor (Panel of 4). Thesis title: *Functional changes of the ganglion cells following photoreceptor degeneration in a mouse model of retinitis pigmentosa (rd1).*
15. Michael Eager (2014), Department of Otolaryngology, University of Melbourne, Principal Supervisor (Panel of 2). Thesis title: *Neural Modelling in the Cochlear Nucleus.*
16. Dean Freestone (2012), Department of Electrical and Electronic Engineering, The University of Melbourne, Principal Supervisor (Panel of 3). Thesis title: *Epileptic Seizure Prediction and the Dynamics of the Electrical Fields of the Brain.* Awarded the Chancellor's Prize for Excellence in the PhD Thesis in Science and Engineering.
17. Colin Hales (2011), Department of Electrical and Electronic Engineering, The University of Melbourne, Principal Supervisor (Panel of 2). Thesis title: *An Investigation of a Novel Back-Propagation Mechanism in a Neural Membrane Context.*
18. Daniel Taft (2009), Department of Electrical and Electronic Engineering, The University of Melbourne, Principal Supervisor (Panel of 2). Thesis title: *Phase Controlled Signal Processing for Cochlear Implants.*

#### **Completed PhD Students – Co-Supervisor**

19. Yanbo (Liam) Lian (2020), Department of Biomedical Engineering, University of Melbourne, Supervisor (Panel of 3). Thesis title: *Learning receptive field properties in a biologically plausible model of primary visual cortex.*
20. Evgeni Sergeev (2019), Department of Electrical and Electronic Engineering, University of Melbourne, Supervisor (Panel of 3). Thesis title: *Neural tissue electrical modelling at micro and macro scales.*
21. Timothy Esler (2018), Department of Biomedical Engineering, University of Melbourne, Supervisor (Panel of 3). Thesis title: *Modelling current flow and neuronal activation due to electrical stimulation of the retina for the bionic eye.*

22. Ali Almasi (2018), Department of Biomedical Engineering, University of Melbourne, Supervisor (Panel of 4). Thesis title: *What do complex cells of the primary visual cortex encode?*
23. Krysta Trevis (2018), Melbourne School of Psychological Sciences, University of Melbourne, Supervisor (Panel of 3). Thesis title: *Music and brain: the neuroscience underlying the effects of music.*
24. Saeed Ahmadizadeh (2017), Department of Electrical and Electronic Engineering, University of Melbourne, Supervisor (Panel of 3). Thesis title: *Synchronization in complex networks and neural mass models.*
25. Omid Monfared (2017), Department of Electrical and Electronic Engineering, University of Melbourne, Supervisor (Panel of 4). Thesis title: *Modelling electrical stimulation in neural masses.*
26. Xiao Demi Gao (2016), Institute for Telecommunications Research, University of South Australia, Supervisor (Panel of 2). Thesis title: *Information theoretic approaches for finding optimal electrode placements in cochlear implants and bionic eyes.*
27. Thomas Oxley (2016), Medicine Dentistry and Health Sciences, University of Melbourne, Supervisor (Panel of 3). Thesis title: *Feasibility for an endovascular brain machine interface.* Awarded the Chancellor's Prize for Excellence in the PhD Thesis in Medicine, Dentistry and Health Sciences.
28. Martin Spencer (2015), Department of Electrical and Electronic Engineering, University of Melbourne, Supervisor (Panel of 2). Thesis title: *Information representation in the octopus cell circuits of the mammalian auditory brainstem.*
29. Andre Peterson (2015), Department of Electrical and Electronic Engineering, University of Melbourne, Supervisor (Panel of 5). Thesis title: *The neurodynamics of epilepsy.*
30. Adam Hersbach (2015), Department of Electrical and Electronic Engineering, University of Melbourne, Supervisor (Panel of 3). Thesis title: *Noise reduction for cochlear implant speech processing.*
31. Robert Kerr (2014), Department of Electrical and Electronic Engineering, University of Melbourne, Supervisor (Panel of 3). Thesis title: *Learning with STDP in recurrently connected networks of spiking neurons.*
32. Richard Balson (2014), Department of Electrical and Electronic Engineering, University of Melbourne, Supervisor (Panel of 4). Thesis title: *Tracking physiological changes that lead to seizures in focal epilepsy: A method for titrating new therapies.*
33. Emily O'Brien (2012), Department of Electrical and Electronic Engineering, The University of Melbourne, Supervisor (Panel of 4). Thesis title: *Measuring and Predicting the Spatial Resolution of Neural Activation from Retinal Implants.*
34. Catherine Davey (2012), Department of Electrical and Electronic Engineering, The University of Melbourne, Supervisor (Panel of 2). Thesis title: *MRI-Based Connectivity Measures.*
35. Nicholas Opie (2012), Department of Electrical and Electronic Engineering, The University of Melbourne, Supervisor (Panel of 4). Thesis title: *Thermal Safety of a Retinal Prosthesis.*
36. Matthieu Gilson (2009), Department of Electrical and Electronic Engineering, The University of Melbourne, Supervisor (Panel of 3). Thesis title: *Learning in Biological-Like Neural Networks: Spike-Timing Dependent Plasticity in Recurrently Connected Networks.*

#### **Current PhD Students – Principal Supervisor**

1. Rachel Stirling (commenced 2019), Department of Biomedical Engineering, University of Melbourne, Principal supervisor (Panel of 2). Thesis title: *TBC.*

2. Kevin Meng (commenced 2019), Department of Biomedical Engineering, University of Melbourne, Principal supervisor (Panel of 2). Thesis title: *TBC*.
3. Andisheh (Andi) Partovi (commenced 2018), Department of Biomedical Engineering, University of Melbourne, Principal supervisor (Panel of 2). Thesis title: *TBC*.
4. Zhuying Chen (commenced 2017), Department of Biomedical Engineering, University of Melbourne, Principal supervisor (Panel of 4). Thesis title: *High frequency oscillations and epilepsy*.
5. Melissa Louey (commenced 2017), Department of Biomedical Engineering, University of Melbourne, Principal Supervisor (Panel of 2). Thesis title: *Towards a better understanding of the neuromotor control of children with dyskinetic cerebral palsy*.
6. Daniel Payne (commenced 2016), Department of Biomedical Engineering, University of Melbourne, Principal Supervisor (Panel of 2). Thesis title: *Algorithms for seizure forecasting in long-term intracranial electroencephalogram (iEEG) recordings*.
7. Rui Li (commenced 2015), Department of Biomedical Engineering, University of Melbourne, Principal Supervisor (Panel of 2). Thesis title: *Localisation and reconstruction of brain sources from EEG/MEG using beamformers*.
8. Kyle Slater (commenced 2010), Department of Electrical and Electronic Engineering, University of Melbourne, Principal Supervisor (Panel of 4). Thesis title: *A novel system towards effective diagnosis and treatment of epilepsy and other neurological disorders*.

#### **Current PhD Students – Co-Supervisor**

9. James Bennett (commenced 2018), Department of Biomedical Engineering, University of Melbourne, Supervisor (Panel of 2). Thesis title: *Application of machine learning techniques for improved brain-computer interfacing*.
10. Jack Drummond (commenced 2018), Department of Biomedical Engineering, University of Melbourne, Supervisor (Panel of 2). Thesis title: *Minimally-invasive neuromodulation by endovascular focussed ultrasound*.
11. Jing Mu (commenced 2017), Department of Mechanical Engineering, University of Melbourne, Supervisor (Panel of 2). Thesis title: *Real-time human-robot interaction through multi-EEG brain-machine interface*.
12. Alexander Bryson (commenced 2016), Florey Institute of Neuroscience & Mental Health, University of Melbourne, Supervisor (Panel of 3). Thesis title: *Computational modeling of genetic epilepsy*.

#### **Completed Masters by Research Students**

1. Rodney Hollow (completed MAud 2011), Department of Otolaryngology, University of Melbourne, Supervisor (Panel of 2). Thesis title: *An evaluation of speech perception when introducing adaptive dynamic range optimization (ADRO) to adults who use both a cochlear implant and a contralateral hearing aid*.
2. Xingwen Emma Liang (commenced 2008), Department of Electrical & Electronic Engineering, University of Melbourne, Supervisor (Panel of 3). Thesis title: *Neural correlates in vegetative state*.
3. Andrew W. Wee (completed MEngSc 2007), Faculty of Engineering, University of Melbourne, Principal Supervisor (Panel of 3). Thesis title: *A continuous wavelet transform algorithm for peak detection and estimation*.

### Completed Honours Students

1. Brooke Macnab (BSc Hons 2017), Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne, Co-Supervisor (Panel of 3). Thesis title: *Finding meaning in song: Investigating social communication in the neuroligin-3 mouse model of autism.*
2. Stephanie Bland (BBS Sc Hons 2010), School of Psychological Science, La Trobe University, Co-Supervisor (Panel of 2). Thesis title: *Auditory discrimination and language in typically developing 3-6 year old children.*
3. Emily Wood (BBS Sc Hons 2008), School of Psychological Science, La Trobe University, Co-Supervisor (Panel of 2). Thesis title: *The relationship between auditory processing skills and language development.*
4. Collin McDonnell (BSc Hons 2006), Department of Otolaryngology, The University of Melbourne, Principal Supervisor (Panel of 2). Thesis title: *The effect of rate of stimulation on spectral masking with cochlear implants.*
5. Toni Stephanakis (BBS Sc Hons 2005), School of Psychological Science, La Trobe University, Co-Supervisor (Panel of 2). Thesis title: *The association between auditory processing abilities, memory and language outcome in 4 to 5 year old children.*
6. Kimberley Scott (BBS Sc Hons 2005), School of Psychological Science, La Trobe University, Co-Supervisor (Panel of 2). Thesis title: *The relationship between the auditory processing of syllables and language development.*
7. Hazel Moulder (BSc Hons 2004), Department of Otolaryngology, University of Melbourne, Co-Supervisor (Panel of 2). Thesis title: *Confounded double vowels: Reducing F0 salience provides evidence for segregation via non-F0-guided mechanisms.*
8. Daniella Natale (Post. Dip. Psychology. 2004), School of Psychological Science, La Trobe University, Co-Supervisor (Panel of 2). Thesis title: *The association of cognitive ability and speech recognition in noise in young children.*
9. Kelly Venten (BBS Hons 2003), School of Psychological Science, La Trobe University, Co-Supervisor (Panel of 2). Thesis title: *The association between cognitive ability and speech recognition in noise.*

### Interns

1. Teo Gaudin (2018), Department of Biomedical Engineering, University of Melbourne, Principal Supervisor. EPFL, Switzerland.
2. Junya Sato (2018), Department of Biomedical Engineering, University of Melbourne, Principal Supervisor. Osaka University, Japan.
3. Yuki Miyazaki (2018), Department of Biomedical Engineering, University of Melbourne, Principal Supervisor. Project title: *Decoding movement intent using convolutional neural networks.* Osaka University, Japan.
4. Subhajit Mohanty (2014), Department of Electrical & Electronic Engineering, University of Melbourne, Principal Supervisor. Thesis title: *Neural response based phosphene simulator for the bionic eye.* IIT-Kanpur, India.
5. Roland Diggelmann (2013), Department of Electrical & Electronic Engineering, University of Melbourne, Principal Supervisor. Thesis title: *Development of auditory signal processing algorithms based on the octopus cell pathway.* Ecole Polytechnique Federale de Lausanne School of Life Sciences, Switzerland.
6. Chetna Punia (2012-2013), Department of Electrical & Electronic Engineering, University of Melbourne, Principal Supervisor (Panel of 2). Thesis title: *Development of spiking neuron*

*model of a cortical column for epilepsy*. School of Biosciences and Technology, Vellore Institute of Technology, India.

7. Lisa Polster (2012-2013), Department of Electrical & Electronic Engineering, University of Melbourne, Principal Supervisor (Panel of 2). Thesis title: *An estimation framework of cortical activity: Applied to electrophysiological data recorded from the auditory cortex of cats*. Institute for Biomedizinische Technik, Technische Universität Ilmenau, Germany.
8. Daniella Lattner (2011-2012), Department of Electrical & Electronic Engineering, University of Melbourne, Principal Supervisor (Panel of 2). Thesis title: *Analysis of responses of the epileptic brain to electrical probing*. Institute for Biomedizinische Technik, Technische Universität Ilmenau, Germany.
9. Narendra Chaudhary (2011), Department of Electrical & Electronic Engineering, University of Melbourne, Principal Supervisor (Panel of 2). Thesis title: *Investigation of neuronal network activity in response to spatiotemporal input patterns*. IIT-Kanpur, India.
10. Debbie Klooster (2010), Department of Electrical & Electronic Engineering, University of Melbourne, Principal Supervisor (Panel of 2). Thesis title: *Beyond spikes and seizures: Detection of interictal EEG asymmetries in focal epilepsy*. Department of Biomedical Engineering, Technical University Eindhoven, Netherlands.

### **Master of Audiology Student Projects**

1. Renee Garuccio (completed MClinAud 2007), Department of Otolaryngology, University of Melbourne, Co-Supervisor (Panel of 2). Thesis title: *Comparison of new and old CNC word lists*.
2. Rena Kulandaivelu (completed MClinAud 2006), Department of Otolaryngology, University of Melbourne, Co-Supervisor (Panel of 2). Thesis title: *Assessing the typical speech perception errors of adults with mild to moderate sensorineural hearing loss*.
3. Jamuna Arasu (completed MClinAud 2006), Department of Otolaryngology, University of Melbourne, Co-Supervisor (Panel of 2). Thesis title: *Examining the effect of the vestibular system on sound localisation*.
4. Tianzhen Hu (completed MClinAud 2005), Department of Otolaryngology, University of Melbourne, Principal Supervisor (Panel of 2). Thesis title: *Effect of rate of stimulation on loudness tolerance range of cochlear implant users*.

### **Teaching**

- 2019: BioDesign Innovation, ME(Biomedical) course, Department of Biomedical Engineering, University of Melbourne (whole course, shared with Prof Michael Vitale).
- 2018: Neural Information Processing, ME(Biomedical) course, Department of Biomedical Engineering, University of Melbourne (whole course, shared with Dr Martin Spencer).
- 2018: BioDesign Innovation, ME(Biomedical) course, Department of Biomedical Engineering, University of Melbourne (whole course, shared with Prof Michael Vitale, Melbourne Business School).
- 2017: BioDesign Innovation, ME(Biomedical) course, Department of Biomedical Engineering, University of Melbourne (whole course, shared with Prof Michael Vitale, Melbourne Business School).
- 2016: BioDesign Innovation, ME(Biomedical) course, Department of Electrical & Electronic Engineering, University of Melbourne (whole course, shared with A/Prof Kwanghui Lim, Melbourne Business School).

- 2011-2015: Neural Information Processing, ME(Biomedical) course, Department of Electrical & Electronic Engineering, University of Melbourne (whole course).
- 2013, 2015: Biosystems Design, Science and Biomedicine third year course, Department of Electrical & Electronic Engineering, University of Melbourne (1/2 course).
- 2010-2012: Fundamentals of Biosignals, Science and Biomedicine third year course, Department of Electrical & Electronic Engineering, University of Melbourne (1/2 course).
- 2010-2012: Biomedical Engineering, Master of Biomedical Engineering course, Department of Electrical & Electronic Engineering, University of Melbourne (1/2 course).
- 2008, 2010, 2012: Advanced Neural Information Processing, PhD Coursework, Department of Electrical & Electronic Engineering, University of Melbourne (Lectures, Course Plan and Assessment).
- 2009, 2011: Advanced Studies 2, PhD Coursework, Department of Electrical & Electronic Engineering, University of Melbourne (Mentoring and Assessment).
- 2008-2011: Seeing: The Whole Picture, First Year, Breadth Subject, University of Melbourne (1 lecture, 2 hour Fusion Panel).
- 2008: Advanced Studies in Biomedical Engineering, PhD Coursework, Department of Electrical & Electronic Engineering, University of Melbourne (4 lectures).
- 2008-2009: Signal Processing 2, fourth year course, Department of Electrical & Electronic Engineering, University of Melbourne (2 lectures).
- 2007-2010: Neural Information Processing, Master of Biomedical Engineering course, Department of Electrical & Electronic Engineering, University of Melbourne (1/4-1/3 course).
- 2007-2009: Neurons: From Action Potential to Learning, third year course, Department of Electrical & Electronic Engineering, University of Melbourne (whole course).
- 2006-2008, 2010: Auditory Processing and Hearing Bionics, Master of Biomedical Engineering course, Department of Electrical & Electronic Engineering, University of Melbourne (1/3-1/2 course).
- 2004: Signal Processing 1 (Fundamentals), third year course, Department of Electrical & Electronic Engineering, University of Melbourne (1 lecture).
- 2004: Behavioural Neuroscience – Neural Basis of Unconscious Processing B, second year course, Faculty of Science, Technology and Engineering, La Trobe University (1 lecture).
- 2001-2003: Multimedia Signal Processing, honours year course, Department of Electrical & Electronic Engineering, University of Melbourne (1/4 course).
- 1996: Coordinator of Second Year Laboratories, Department of Electrical and Electronic Engineering, University of Melbourne
- 1994-1996: Fields and Transmission Lines 2, second year course, Department of Electrical and Electronic Engineering, University of Melbourne (1/2 course).
- 1994-1995: Advanced Communication Systems, honours year course, Department of Electrical and Electronic Engineering, University of Melbourne (1/2 course).
- 1993-1996: Electronics 3, third year course, Department of Electrical and Electronic Engineering, University of Melbourne (1/2 course).
- 1992-1995: Tutoring in Electrical and Electronic Engineering, University of Melbourne.

### **Peer-Reviewing of Grant Application**

2017-2019: Member, Grant Review Panel, National Health & Medical Research Council

2010-2019: Assessor of ARC, NHMRC and international grant applications

### **Membership of Professional Associations**

2018 – Present: American Epilepsy Society

2017 – Present: Fellow of Engineers Australia

2017 – Present: Society for Neuroscience

2016 – Present: Senior Member of Institute of Electrical and Electronic Engineers (IEEE)

2009 – Present: Member of Engineers Australia Australasian Association for Engineering Education (AAEE) Society

1992 – Present: Member of Australasian Speech Science and Technology Association (ASSTA)

2004 – 2010: Secretary

1995 – 2010: Publications Manager

2003 – 2004: Grants Program Manager

2003 – 2005: Newsletter Editor

1995 – 2004: Executive member

1995 – 2001: Treasurer

1992 – 2016: Member of Institute of Electrical and Electronic Engineers (IEEE)

2006 – 2010: Member of International Speech Communication Association (ISCA)

### **Honorary Duties**

2018 – Present: Member, Scientific Advisory Committee, National Vision Research Institute

2017 – Present: Member, Scientific Advisory Committee, NAVi Medical Technologies

2014 – Present: Member, Scientific Advisory Committee, Synchron Corp

2005, 2007, 2009: Introduction to Speech Processing, ARC Network in Human Communication Science (HCSNet) Summer School, Macquarie University, Sydney.

2008: History, Hardware and Sound Processing for the Bionic Ear, Tutorial at INTERSPEECH 2008, Brisbane, Australia, 22 September 2008.

2004: Introduction to Speech Processing, Australasian Language Technology Association Summer School, Macquarie University, Sydney.

2003: Introduction to Speech Processing, Australasian Language Technology Association Summer School, The University of Melbourne.

1994: Presenter at Physics Gymnasium, The University of Melbourne.

1993: Group Leader of Engineering Residential Summer School, The University of Melbourne.

### **Service to the Discipline**

2019 – Present: IEEE Open Access Journal of Engineering in Medicine and Biology (OJEMB), associate editor.

2017 – Present: Bioelectronics in Medicine, editorial board member.

2015 – 2019: Member of the Melbourne Neuroscience Institute Scientific Consultative Forum.

## Invited Presentations

- 2019: *Endovascular Brain Stimulation*, NeuroEng 2019, 12th Australasian Workshop on Computational Neuroscience and Neural Engineering, Adelaide, Australia, 29-30 November 2019, invited by organising committee.
- 2019: *Brain Stimulation with a Chronically Implanted Endovascular Stent-Based Electrode Array*, 2019 Carolina Neurostimulation Conference, Chapel Hill, NC, USA, 4-6 June 2019, invited by organising committee.
- 2018: *The Stentrode: Endovascular Electrodes for Brain-Computer Interfaces*, Design of Medical Devices Conference, Minneapolis, MN, USA, 10-12 April 2018, invited by organising committee.
- 2017: *Data-driven neural mass modelling of epileptic seizures*, 4th International Conference on Neural Field Theory: The Interplay of Models and Data Assimilation, Reading, United Kingdom, 3-5 July 2017, invited by organising committee.
- 2017: *New Scientist Instant Expert: How Your Brain Works*, 25 February 2017, Future Bionics, presentation
- 2016: *Minimally-invasive intracranial electrodes for brain-computer interfaces*, 2016 Australasian Cognitive Neuroscience Society (ACNS) Conference, Shoal Bay, Australia, 24-27 November 2016, invited by organising committee.
- 2016: *The Stentrode*, The University of Melbourne MD Student Conference, Melbourne, Australia, 27-30 June 2016, invited by the organising committee.
- 2015: *The Bionic Vision Australia retinal implant research program*, 8<sup>th</sup> Australasian Workshop on Computational Neuroscience, Queenstown, New Zealand, 26-28 August 2015, invited by the organising committee.
- 2014: *Overview of the Bionic Vision Australia retinal implant research program*, 6<sup>th</sup> Adelaide Centre for Neuroscience Research Mount Lofty workshop on "Frontier Technologies for Nervous System Function and Repair", Adelaide, Australia, 28-30 November 2014, invited by the Adelaide Centre for Neuroscience Research.
- 2013: *Data-driven neural mass models*, Neural Engineering Transformative Technologies Summer School, University of Nottingham, Nottingham, UK, 1-5 July 2013, invited by the Neural Engineering Transformative Technologies European Consortium.
- 2013: *An estimation framework for neural mass models*, Mathematical Biosciences Institute Workshop3: Disease, Ohio State University, Columbus, Ohio, USA, 4-8 February 2013, invited by the Mathematical Biosciences Institute.
- 2012: *Biomedical Research Overview – University of Melbourne*, Australian Biomedical Engineering Conference ABEC 2012, Brisbane, Queensland, Australia, 16-19 September 2012, invited by the Australian Biomedical Engineering Conference.
- 2008: *Signal processing for improved speech perception: Application of auditory models*, Medical Bionics - A New Paradigm for Human Health, Lorne, Australia, 16-19 November 2008, invited by The Bionic Ear Institute.
- 2007: *Current speech technologies and their applications to language learning/teaching*, Fifteenth Biennial Conference of the Japanese Studies Association of Australia, Canberra, Australia, 1-4 July 2007, invited by the Japanese Studies Association of Australia.
- 2007: *The technology of hearing*, 2007 Australian Communications Theory Workshop, Adelaide, Australia, 5-7 February 2007, invited by the ARC Communications Research Network (ACoRN).



- 2006: *Applying auditory and neural models to hearing aids and ASR*, Human and Machine Speech Workshop, Sydney, Australia, 1 December 2006, invited by the ARC Network in Human Communication Science (HCSNet).
- 2005: *Sensing by the ear and for the ear*, The Second International Conference on Intelligent Sensors, Sensor Networks and Information Processing, ISSNIP-2005, Melbourne, Australia, 5-8 December 2005, invited by the ARC Network for Intelligent Sensors, Sensor Networks and Information Processing.
- 2005: *Cochlear implant sound processing based on an auditory model*, The Second China Australia Symposium, Beijing, China, 9-13 October 2005, invited by the Australian Academy of Science and the Australian Academy of Technological Sciences and Engineering.

### **Conference Organisation**

- 2020: Treasurer, Local Organising Committee, 29 Annual Computational Neuroscience Meeting, CNS\*2020, Melbourne, Australia.
- 2019: Member of the Organising Committee, Australian Biomedical Engineering Conference, ABEC 2019, Melbourne, Australia.
- 2018: Associate Editor, Engineering in Medicine and Biology Conference, EMBC 2018, USA.
- 2017: Associate Editor, Engineering in Medicine and Biology Conference, EMBC 2017, South Korea.
- 2016: Associate Editor, Engineering in Medicine and Biology Conference, EMBC 2016, Italy.
- 2015: Member of the Organising Committee of the Seventh International Workshop on Seizure Prediction, IWSP7, Melbourne, Australia.
- 2015: Member of the Organising Committee of the Australian Biomedical Engineering Conference, ABEC 2015, Melbourne, Australia.
- 2015: Associate Editor, Engineering in Medicine and Biology Conference, EMBC 2015, Italy.
- 2015: Member of the Scientific Program Committee of NeuroEng 2015: The 8th Australian Workshop on Computational Neuroscience, New Zealand.
- 2014: Associate Editor, Engineering in Medicine and Biology Conference, EMBC 2014, USA.
- 2014: Member of the Scientific Program Committee of NeuroEng 2014: The 7th Australian Workshop on Computational Neuroscience, Adelaide, Australia.
- 2013: Chair of NeuroEng2013: The 6th Australian Workshop on Mathematical and Computational Neuroscience, Melbourne, Australia.
- 2013: Associate Editor, Engineering in Medicine and Biology Conference, EMBC 2013, Japan.
- 2012: Associate Editor, Engineering in Medicine and Biology Conference, EMBC 2012, USA.
- 2011: Member of the Technical Program Committee of the Symposium on Biomimetic Sensors and Neuronal Information Processing, Seventh International Conference on Intelligent Sensors, Sensor Networks and Information Processing ISSNIP 2011, Adelaide, Australia.
- 2010: Member of the Organising Committee of the Thirteenth Australasian International Conference on Speech Science and Technology, SST-2010, Melbourne, Australia.
- 2009: Member of the Organising Committee of the 2009 International Symposium on Bioelectronics and Bioinformatics, ISSB 2009, Melbourne, Australia.
- 2008: Member of the Organising Committee and Technical Program Committee of 3rd Australian Workshop on Mathematical and Computational Neuroscience – Neuro-Eng2008, Melbourne, Australia.

- 2008: Treasurer of the Tenth International Conference on Spoken Language Processing, INTERSPEECH 2008, Brisbane, Australia.
- 2005-2009: Member of the Program Committee of the annual International Conference on Intelligent Sensors, Sensor Networks and Information Processing, ISSNIP, Australia.
- 2004: Chair of the organising committee of the Workshop on Biological Models for Signal Processing, part of the International Conference on Intelligent Sensors, Sensor Networks and Information Processing, ISSNIP 2004, Melbourne Australia.
- 2002: Treasurer of the Ninth Australian International Conference on Speech Science and Technology, SST-2002, Melbourne Australia.
- 1998: Assistant finance coordinator for the Fifth International Conference on Spoken Language Processing, ICSLP-98, Sydney Australia.

### **Conference Chairing**

- 2019: Co-Chair of the Scientific Organising Committee, Australian Biomedical Engineering Conference, ABEC 2019, Melbourne, Australia.
- 2014: Chair at Australian Workshop on Computational Neuroscience, NeuroEng 2014.
- 2013: Chair at Australian Workshop on Computational Neuroscience, NeuroEng 2013.

### **Paper Reviewing**

I have reviewed papers for many journals and national and international conferences.

### **Postgraduate Thesis Examination**

- 2019: N. D. Truong, Epileptic seizure detection and forecasting ecosystem, PhD Dissertation, University of Sydney, Australia.
- 2019: A. Janani, Quantitating tonic muscle activity in head and neck for artefact removal or disease understanding, PhD Dissertation, Flinders University, Australia.
- 2019: D. Karpul, On the application and generation of subsensory electrical nerve stimulation for the improvement of vibration perception in patients with HIV-related sensory neuropathy, PhD Dissertation, Western Sydney University, Australia.
- 2018: Y. Xu, A digital neuromorphic auditory pathway, PhD Dissertation, Western Sydney University, Australia.
- 2017: R. Townsend, Spatiotemporal patterns in neural population activity: Identification, dynamics, and function, PhD Dissertation, University of Sydney, Australia.
- 2016: F. Hosseinabadi, Modelling electrical stimulation of the human retina, PhD Dissertation, University of Auckland, New Zealand, oral examiner.
- 2015: P. Wong, High fidelity bioelectric modelling of the implanted cochlea, PhD Dissertation, University of Sydney, Australia.
- 2015: X. Zhao, Bursting dynamics in corticothalamic neural-field theory, PhD Dissertation, University of Sydney, Australia.
- 2015: E. Negahbani, Dynamics and precursor signs for phase transitions in neural systems, PhD Dissertation, University of Waikato, New Zealand, oral examiner.
- 2014: T. Guo, Computational modelling of functionally-identified retinal ganglion cells using a multi-objective optimisation approach, PhD Dissertation, University of New South Wales, Australia.

- 2012: V. Marimuthu, Exploring place pitch and temporal pitch perception with cochlear implants, PhD Dissertation, Macquarie University, Australia.
- 2010: J. Teutenberg, On the Transformation of Accent, PhD Dissertation, University of Auckland, New Zealand, oral examiner.
- 2010: D. Smith, Lexical Tone, Perceptual training, and children with cochlear implants, PhD Dissertation, University of Western Sydney, Australia.
- 2008: S. Haque, Perceptual features for speech recognition, PhD Dissertation, University of Western Australia, Australia.
- 2005: J.H. Nealand, Data-driven and time-frequency based feature extraction for speaker recognition, PhD Dissertation, RMIT University, Australia.
- 2005: M. Goorevich, An algorithm testbench for cochlear implant DSP speech processors, Masters Thesis, Macquarie University, Australia.

### **Appearances in Media, Media Events, Podcasts, Magazines and Government Documents**

- 2019: Engineers Australia, September 2019, appeared on Instagram feed
- 2019: Engineers Australia *Create Magazine*, August 2019, Susan Muldowney, Core Concern, commentary
- 2019: *New Scientist*, 17 July 2019, Ruby Prosser Scully, Elon Musk's plans for mind-controlled gadgets: what we know so far, <https://www-newscientist-com.cdn.ampproject.org/c/s/www.newscientist.com/article/2210201-elon-musks-plans-for-mind-controlled-gadgets-what-we-know-so-far/amp/>
- 2019: *Pursuit*, 28 May 2019, Andrew Trounson, Reading the body's electrical signals to treat illness, <https://pursuit.unimelb.edu.au/articles/reading-the-body-s-electrical-signals-to-treat-illness>
- 2019: *The AGE*, 24 April 2019, Expert Comment, Hi, robot: new AI turns brainwaves into speech, <https://www.theage.com.au/national/scientists-develop-an-ai-that-can-turn-brainwaves-into-speech-20190424-p51gvj.html>
- 2018: *ABC Radio National*, 30 September 2018, Panel Member, Go Hack Yourself, <http://www.abc.net.au/radionational/programs/sciencefriction/go-hack-yourself/10312864>
- 2018: *Science Week at the Cathedral*, 15 August 2018, Panel Member, Game Changers and Change Makers
- 2018: *Melbourne Knowledge Week*, 12 May 2018, Panel Member, Future Hospital: Advancing Med-Tech Innovation in Melbourne, <https://mkw.melbourne.vic.gov.au/events/advancing-med-tech-innovation-in-melbourne>
- 2018: *Melbourne Engineer*, May 2018, Feature on BioDesign Innovation
- 2018: *Melbourne Business School*, April 2018, Feature on BioDesign Innovation
- 2017: *Pursuit, Science Matters*, 27 December 2017, Sounds Like Science Fiction, <https://pursuit.unimelb.edu.au/articles/sounds-like-science-fiction>
- 2017: *Biotech Daily*, 11 December 2017, Daily news on ASX-listed biotechnology companies, Melbourne Uni, IBM Collaborate to Predict Epileptic Seizures
- 2017: *IFL Science*, 5 December 2017, Implants and Deep Learning Could Predict Epilepsy Attacks, <http://www.iflscience.com/health-and-medicine/implants-and-deep-learning-could-predict-epilepsy-attacks/>

- 2017: *Medical Xpress*, 5 December 2017, Personalised epilepsy seizure prediction a possibility with AI, <https://medicalxpress.com/news/2017-12-personalised-epilepsy-seizure-possibility-ai.html>
- 2017: *Bloomberg TV*, 23 November 2017, live television interview on the Stentrode, broadcast internationally and online, <https://www.bloomberg.com/news/articles/2017-11-22/this-tiny-implant-could-get-paralyzed-patients-moving-again>
- 2017: *IEEE Pulse*, September 2017, Moving objects with your mind, <https://pulse.embs.org/september-2017/moving-objects-mind/>
- 2017: *Digital Trends*, 17 May 2017, Brain implant allows paralyzed people to control an exoskeleton with their mind, <https://www.digitaltrends.com/cool-tech/brain-stent-exoskeleton-control/>
- 2017: *New Scientist*, 17 May 2017, Brain stent to let five paralysed people control exoskeleton, <https://www.newscientist.com/article/mg23431261-600-brain-control-via-blood-vessel-stent/amp/>
- 2017: *Lab Online*, 24 April 2017, Conquering epilepsy with computer science, <http://www.labonline.com.au/content/research-development/article/conquering-epilepsy-with-computer-science-46643629>
- 2017: *SBS Radio 1*, 9 April 2017, interview about BioDesign Innovation program with Prof Chaim Lotan
- 2016: *Embedded Computing Design*, 23 December 2016, Beating epilepsy with algorithms, <http://embedded-computing.com/guest-blogs/beating-epilepsy-with-algorithms/>
- 2016: *BBC Future*, 13 November 2016, The benefits and downsides of mind-controlled machines, <http://www.bbc.com/future/story/20161111-the-benefits-and-downsides-of-mind-controlled-machines>
- 2016: *The Melbourne Engineer*, 2 November 2016, Electrical approach triggers new treatments for chronic disease, <http://themelbourneengineer.eng.unimelb.edu.au/2016/11/electrical-approach-triggers-new-treatments-chronic-disease>
- 2016: *EEWeb Electrical Engineering Community*, 25 October 2016, Featured Engineer, <https://www.eeweb.com/spotlight/interview-with-dr.-david-grayden>
- 2016: *Datanami*, 24 October 2016, “Elusive Seizure Signal the Subject of Kaggle Competition”, <https://www.datanami.com/2016/10/24/seizure-signal-subject-kaggle-competition>
- 2016: *RN Afternoons*, 12 September 2016, ABC Radio National interview with Michael Mackenzie
- 2016: *Breakfast with Red Symons*, 6 September 2016, 774 ABC Melbourne interview
- 2016: *Catalyst*, 16 August 2016, “Stentrode”, <http://www.abc.net.au/catalyst/stories/4519966.htm>
- 2016: *The Conversation*, 2 June 2016, “To understand the brain, it helps to make a computer model of one”, <https://theconversation.com/to-understand-the-brain-it-helps-to-make-a-computer-model-of-one-57729>
- 2016: *Nova*, Australian Academy of Science, 19 April 2016, expert review and writing, <http://www.nova.org.au/people-medicine/bionic-eye>
- 2016: *Engineers Australia*, 10 March 2016, “Breathing life into the bionic spine”, <https://www.engineersaustralia.org.au/portal/news/breathing-life-bionic-spine>
- 2016: *3010*, Issue 1, 2016, “Five questions ... on the ‘bionic spine’ for Professor David Grayden”, <http://mag.alumni.unimelb.edu.au/five-questions-on-the-bionic-spine-for-professor-david-grayden/>

- 2016: *Pursuit*, 9 February 2016, “Moving with the power of thought”,  
<https://pursuit.unimelb.edu.au/articles/moving-with-the-power-of-thought>
- 2015: *COSMOS*, 2 November 2015, “Artificial skin returns a sense of touch”,  
<https://cosmosmagazine.com/technology/artificial-skin-returns-sense-touch>
- 2015: *Herald Sun*, 5 October 2015, “US Defence funds \$6m ‘blue sky’ Melbourne research project to treat Post Traumatic Stress Syndrome”, <http://www.heraldsun.com.au/news/victoria/us-defense-funds-6m-blue-sky-melbourne-research-project-to-treat-post-traumatic-stress-syndrome/news-story/80399695214dc9232af6a09743619ea6>
- 2015: *ABC Science*, 18 June 2015, “Bionic ear could harness brain's 'octopus cells' to improve sound”, <http://www.abc.net.au/science/articles/2015/06/18/4244213.htm>
- 2015: *COSMOS*, 1 June 2015, “Moving a robot arm with your mind”,  
<https://cosmosmagazine.com/biology/moving-robot-arm-your-mind>
- 2013: *The Age*, 9 December 2013, “Research predicting epilepsy”,  
<http://www.theage.com.au/national/education/voice/research-predicting-epilepsy-20131203-2yo9l.html>
- 2013: *The Conversation*, 4 October 2013, “Brain images give clues to activity in vegetative patients”, <https://theconversation.com/brain-images-give-clues-to-activity-in-vegetative-patients-18810>
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- [1] Oxley T, Opie NL, John SE, Rind GS, Ronayne S, Burkitt AN, **Grayden DB**, May CN, O'Brien TJ (2017) A minimally invasive endovascular stent-electrode array for chronic recordings of cortical neural activity. In Eds. Guger C, Allison B, Lebedev M, *Brain-Computer Interface Research: A State-of-the-Art Summary 6*, Springer, Cham, 55-63.
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- [2] Kuhlmann L, **Grayden DB**, Cook MJ (2017) Special issue on epilepsy mechanisms, models, prediction and control, *International Journal of Neural Systems* 27, 1702001 (2 pp)
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- [2] Spencer M, Kameneva T, **Grayden DB**, Meffin H, Burkitt AN (2019) Retinal implant vision processing: a global shaping algorithm, *12<sup>th</sup> Australasian Workshop on Computational Neuroscience and Neural Engineering: NeuroEng 2019*, Adelaide, Australia, 29-30 November 2019.
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- [134] Taft DA, **Grayden DB**, Burkitt AN (2008) A frequency-position function for cochlear implants, *ARO 31st MidWinter Meeting*, Phoenix, Arizona, USA, 16-21 Feb. 2008.
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### Invited Conference Presentations

- [1] **Grayden DB** (2019) Endovascular Brain Stimulation, *NeuroEng 2019, 12th Australasian Workshop on Computational Neuroscience and Neural Engineering*, Adelaide, Australia, 29-30 November 2019, invited by organising committee.
- [2] **Grayden DB** (2019) Brain Stimulation with a Chronically Implanted Endovascular Stent-Based Electrode Array, *2019 Carolina Neurostimulation Conference*, Chapel Hill, NC, USA, 4-6 June 2019.
- [3] **Grayden DB** (2018) The Stentrode: Endovascular electrodes for brain-computer interfaces, *Design of Medical Devices Conference*, Minneapolis, MN, USA, 10-12 April 2018.
- [4] **Grayden DB** (2017) Data-driven neural mass modelling of epileptic seizures, *4th International Conference on Neural Field Theory: The Interplay of Models and Data Assimilation*, Reading, United Kingdom, 3-5 July 2017.
- [5] **Grayden DB** (2016) Minimally-invasive intracranial electrodes for brain-computer interfaces, *2016 Australasian Cognitive Neuroscience Society (ACNS) Conference*, Shoal Bay, Australia, 24-27 November 2016.
- [6] **Grayden DB**, Opie N, John S, Wong Y (2016) *The Stentrode*, *The University of Melbourne MD Student Conference*, Melbourne, Australia, 27-30 June 2016.
- [7] **Grayden DB** (2015) The Bionic Vision Australia retinal implant research program, *8th Australasian Workshop on Computational Neuroscience and Neuromorphic Engineering*, Queenstown, New Zealand, August 26-28 2015.

- [8] **Grayden DB** (2014) Overview of the Bionic Vision Australia retinal implant research program, *6<sup>th</sup> Adelaide Centre for Neuroscience Research Mount Lofty Workshop on "Frontier Technologies for Nervous System Function and Repair"*, Mt Lofty, Adelaide, Australia, 28-30 November 2014.
- [9] **Grayden DB** (2013) An estimation framework for neural mass models, *Mathematical Biosciences Institute Workshop3: Disease*, Ohio State University, Columbus, Ohio, USA, 4-8 February 2013.
- [10] **Grayden DB** (2012) Biomedical Research Overview – University of Melbourne, *Australian Biomedical Engineering Conference ABEC 2012*, Brisbane, Queensland, Australia, 16-19 September 2012.
- [11] **Grayden DB** (2008) Signal processing for improved speech perception: Application of auditory models, *Medical Bionics – A New Paradigm for Human Health*, Lorne, Australia, 16-19 Nov. 2008.
- [12] **Grayden DB** (2007) Current speech technologies and their applications to language learning/teaching, *Fifteenth Biennial Conference of the Japanese Studies Association of Australia*, Canberra, Australia, 1-4 July 2007.
- [13] **Grayden DB** (2007) The technology of hearing, *2007 Australian Communications Theory Workshop*, Adelaide, Australia, 5-7 Feb. 2007.
- [14] **Grayden DB**, Burkitt AN, Eager, M.A., Moulder, H. and Meffin H (2006) Applying auditory and neural models to hearing aids and ASR, *Human and Machine Speech Workshop, The ARC Network in Human Communication Science SummerFest 2006*, Sydney, Australia, 1 Dec. 2006.
- [15] **Grayden DB** (2005) Sensing by the ear and for the ear, *The Second International Conference on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP)*, Melbourne, Australia, 5-8 Dec. 2005.
- [16] **Grayden DB** (2005) Cochlear implant sound processing based on an auditory model, *The Second China Australia Symposium*, Beijing, China, 9-13 Oct. 2005.

### Conference Presentations

- [1] **Grayden DB**, Lim K, Vitale M (2018) BioDesign Innovation Melbourne, *Australian Biomedical Engineering Conference*, Sydney, Australia, 7-10 Oct 2018.
- [2] Erfanian Saeedi N, **Grayden DB**, Blamey P, Burkitt A (2012) A neural network model of sung vowel pitch perception, *14<sup>th</sup> Australian International Conference on Speech Science and Technology, SST 2012*, Sydney, Australia, 3-6 Dec 2012.
- [3] Freestone DR., **Grayden DB**, Burkitt AN, Kuhlmann L, Cook MJ (2008) Cortical Excitability from Electrical Stimulation, *Society for Autonomous Neurodynamics Workshop*, Heemstede, The Netherlands, 2008.
- [4] O'Brien, E., Meffin H, Greferath, U., Burkitt AN, **Grayden DB** (2008). Spatial resolution of a retinal prosthesis, *Medical Bionics - A New Paradigm for Human Health*, Lorne, Australia, 16-19 Nov. 2008.
- [5] Opie, N., Burkitt AN, Farrell, P., **Grayden DB**, Meffin H, Pearce, G., Williams, C. (2008). Thermal safety of a retinal prosthesis: High resolution temperature measurement system, *Medical Bionics - A New Paradigm for Human Health*, Lorne, Australia, 16-19 Nov. 2008.
- [6] O'Sullivan-Greene, E., Peterson, A., Burkitt AN, Mareels, I., **Grayden DB**, Cook M, Kuhlmann L, Fuller K (2008). Modelling for understanding and prediction of epileptic seizures, *Medical Bionics - A New Paradigm for Human Health*, Lorne, Australia, 16-19 Nov. 2008.
- [7] Freestone D, **Grayden DB**, Burkitt AN, Kuhlmann L, Cook M (2008). Epileptic seizure prediction, *Medical Bionics - A New Paradigm for Human Health*, Lorne, Australia, 16-19 Nov. 2008.
- [8] Perry, D., Fallon, J., **Grayden DB**, Millard, R., Shepherd, R. (2008). A fully implantable two-channel cochlear stimulator for rats, *Medical Bionics - A New Paradigm for Human Health*, Lorne, Australia, 16-19 Nov. 2008.

- [9] Byrnes S, Burkitt AN, **Grayden DB**, Meffin H & Trengove, C. (2007). A mechanism for temporal pattern learning and recognition in neural systems, *The 2nd Australian Workshop in Computational Neuroscience*, Adelaide, Australia.
- [10] Taft DA, **Grayden DB**, Burkitt AN, Mareels IMY & Dowell, R.C. (2006). Phase-dependent sound processing for the cochlear implant, *The ARC Network in Human Communication Science SummerFest 2006*, Sydney, Australia.
- [11] **Grayden DB** (2005) Investigation of fine-grained temporal processing for cochlear implants, *The ARC Network in Human Communication Science SummerFest 2005*, Sydney, Australia.
- [12] Surowiecki, V.N., **Grayden DB**, Dowell, R.C., Clark GM & Maruff, P. (2005) Changing perceptions: The influence of visual speech information to auditory perceptions and working memory in children using a cochlear implant and children with normal hearing, *ISCA Workshop on Plasticity in Speech Perception (PSP2005)*, London, UK.
- [13] Surowiecki, V.N., Sarant, J., Maruff, P., Blamey, P., Busby, P., **Grayden DB** & Clark GM (2003) Learning to Hear I: The role of cognition on developing speech perception, vocabulary, and language skills in children using the cochlear implants, *The 22<sup>nd</sup> Australian and New Zealand Conference for Educators of the Deaf*, Fremantle, Australia, January 15-18.
- [14] Surowiecki, V.N., **Grayden DB**, Dowell, R.C., Clark GM & Maruff, P. (2003) Learning to Hear II: The role of visual cues in the auditory perception of synthetic stimuli by children using a cochlear implant and children with normal hearing, *The 22<sup>nd</sup> Australian and New Zealand Conference for Educators of the Deaf*, Fremantle, Australia, January 15-18.
- [15] Surowiecki, V.N., Maruff, P., **Grayden DB**, Clark GM & Dowell, R.C. (2003) Spatial working memory and strategy: Comparison between children using a cochlear implant and healthy control participants, *The 9<sup>th</sup> International Symposium on Cochlear Implants in Children*, Washington, USA, April 24-26.
- [16] Surowiecki, V.N., **Grayden DB**, Dowell, R.C., Clark GM & Maruff, P. (2003) The influence of visual articulation on the auditory perception of voiced PLOSives: Comparison between children using a cochlear implant and children with normal hearing, *The 9<sup>th</sup> International Symposium on Cochlear Implants in Children*, Washington, USA, April 24-26.
- [17] Surowiecki, V.N., **Grayden DB**, Dowell, R.C., Clark GM & Maruff, P. (2003) Audiovisual perception by children using a cochlear implant, *The 14<sup>th</sup> Australian Language and Speech Conference*, Brisbane, Australia, December 4-6.
- [18] Surowiecki, V.N., Maruff, P., **Grayden DB**, Clark GM & Dowell, R.C. (2003) The relationship between hearing loss, cognitive strategies, memory and language, *The 14<sup>th</sup> Australian Language and Speech Conference*, Brisbane, Australia, December 4-6.
- [19] **Grayden DB**, Clark GM & Tari, S. (2002) Evaluation of the differential rate sound processor, *7<sup>th</sup> International Cochlear Implant Conference*, Manchester, UK.
- [20] **Grayden DB** & Clark GM (2000) The effect of rate of stimulation on consonant recognition for users of the CI24M cochlear implant, *Abstracts of the 23<sup>rd</sup> Midwinter Research Meeting of the Association for Research in Otolaryngology*, St Petersburg Beach, USA.
- [21] Dawson, P.W., McKay, C.M., Busby, P.A., **Grayden DB** & Clark GM (1999) Auditory processing abilities in children using cochlear implants: Their relevance to speech perception, *1999 Conference on Implantable Auditory Prostheses*, Asilomar, USA.
- [22] Vandali, A.E., **Grayden DB**, Whitford, L.A., Plant, K.L. & Clark GM (1998) An analysis of high rate speech processing strategies using the Nucleus 24 cochlear implant, *7th Symposium on Cochlear Implants in Children*. Iowa City, Iowa, 4-7 June 1998, 32.

### PhD Thesis

- [1] **Grayden DB** (1999) An Integrated Knowledge-Based Approach to Unrestricted Speech Recognition, PhD Dissertation, The University of Melbourne.

### Commercial in Confidence Reports

- [1] Kenny, O.P. and **Grayden DB** (2003) Report on a collaborative research project between Dynamic Hearing and The Bionic Ear Institute (Human Communication Research Centre).

- [2] Burkitt AN, Clarey, J., Duke, P.F., **Grayden DB**, Kenny, O.P., Paolini, A. and Sidney, T. (2002) Report on a collaborative research project between Telstra Research Laboratories and The Bionic Ear Institute (Human Communication Research Centre).

### Other Publications

- [1] Gilson M, Burkitt AN, **Grayden DB**, Thomas, D., van Hemmen, L. (2010) *Analyzing spike-timing-dependent plasticity in recurrent neuronal networks*, The Neuromorphic Engineer, 10.2417/1201007.002955.
- [2] **Grayden DB** (2004) *Electronic Hearing, PC Update, Melbourne PC User Group*, Vol. 21.

### Software Development

1. **Grayden DB** (2005) **AdSoP**, Program for presentation, response acquisition and results reporting of stimuli presented in a Speed of Processing task. This program was used for two honours projects at La Trobe University.
2. **Grayden DB** (2003) **AdSpon**, Program for presentation, response acquisition and results reporting of spondees presented in noise with adapting SNR. This program has been used for seven projects at The Bionic Ear Institute, The University of Melbourne and La Trobe University. One project is reported in Mok, Grayden, Dowell and Lawrence (2006).
3. **Grayden DB** (2003) **Audiogram** and **HLCalibration**, Programs for hearing screening in a classroom or sound booth setting. This program has been used for three projects at The Bionic Ear Institute and La Trobe University. One project is reported in Moulder, Meffin Grayden (2004).
4. **Grayden DB** (2003) **SDTest**, Program for presenting same-different task for detection and threshold measurement. This program has been used for three projects at The Bionic Ear Institute and University of Melbourne. One project is reported in Rance, McKay and Grayden (2004) and one in Mok, M., Galvin, K.L., Dowell, R.C., McKay, C.M. "Spatial Unmasking and Binaural Advantage for Children with Normal Hearing, a Cochlear Implant and a Hearing Aid, and Bilateral Implants," *Audiology & Neurotology*, 2007.
5. **Grayden DB** (2003) **AVTest**, Program for presenting audio-visual testing. This program has been used so far for one project at The Bionic Ear Institute. The project is reported in Surowiecki, Grayden and Dowell (2002).
6. **Grayden DB** (2002) **CNCMaker**, Program for creating phonemically balanced CNC word lists. This program has been used so far for two projects at The Bionic Ear Institute, two projects at The University of Melbourne and for creation of test material for the Cochlear Implant Clinic of the Royal Victorian Eye & Ear Hospital. One project is reported in Mok, Grayden, Dowell and Lawrence (2006).
7. **Grayden DB** (2002) **CNCPhn**, Program for transcribing results of CNC word tests. This program has been used so far for many projects at The Bionic Ear Institute and The University of Melbourne. One project is reported in Grayden and Clark (2000).
8. **Grayden DB** (2002) **Infotransmit**, Program for evaluating information transmission for CNC words and phonemes presented in nonsense word context. This program has been used for many projects at The Bionic Ear Institute and The University of Melbourne. One project is reported in Mok, Grayden, Dowell and Lawrence (2006).
9. **Grayden DB** and Burkitt AN (2001) **VectorStrength** and **PitchEpoch**, MATLAB programs for evaluating vector strength of neural responses over sets of glottal pulse intervals. This program has been used for one project at The Bionic Ear Institute.
10. **Grayden DB** (1998) **Beetle**, MATLAB program for visualising waveforms, spectra, spectrograms, neural responses and neural spectrograms. This program has been used so far for

two projects at The Bionic Ear Institute. These projects are reported in Burkitt, Clarey, Duke, Grayden, Kenny, Paolini and Sidney (2002) and Clarey, Paolini, Grayden, Burkitt and Clark (2004).

11. **Grayden DB** (1998) **ElecDisc**, Program for evaluating electrode discrimination in children by direct control of a CI-22 cochlear implant. This program has been used so far for one project at The Bionic Ear Institute that is reported in Dawson, McKay, Busby, Grayden and Clark (2000).
12. **Grayden DB** (1998) **ProcRate**, Program for evaluating rate of processing in children by direct control of a CI-22 cochlear implant. This program has been used so far for one project at The Bionic Ear Institute that is reported in Dawson, McKay, Busby, Grayden and Clark (2000).