Scott C. Lowe

Current position

2012–2016 **Ph.D. candidate**, *Institute for Adaptive and Neural Computation, School of Informatics*, University of Edinburgh.
Project: Analysis of experimental data from multi-electrode recordings in the visual cortex. Supervisors: Mark van Rossum, Stefano Panzeri and Alex Thiele.

Education

2011–2012 **MSc with Distinction, in Neuroinformatics by Research**, *University of Edinburgh*, Edinburgh, UK, *average 75.3%*.
Thesis: *An information theoretic analysis of perceptual learning data from macaque V1 and V4*, Supervisors: Alex Thiele and Stefano Panzeri.

2007–2011 **MSci with First Class Honours, in Natural Sciences (Mathematics and Physics)**, *Durham University*, Durham, UK, *average 73.4%*.
Thesis: *On Artifical Neural Networks*, Supervisor: Ian Jermyn.

2005–2007 **A-Levels**, *Sandbach School*, Cheshire, UK.
Mathematics, Further Mathematics, Physics, Chemistry (all grade A).

Miscellaneous Courses

Aug 2016 **Machine Learning Summer School 2016**, *Universidad Católica*, Arequipa, Peru, MLSS16.

Feb 2016 **Machine Learning**, *Stanford University*, via Coursera, *Grade: 100%*.

Experience

2015 **Technical Research Assistant**, *Rochefort Lab, Centre for Integrative Physiology*, University of Edinburgh.
Development of tools for analysis of calcium imaging data from mouse primary visual cortex.

2010 **Web Technician**, *FleXtel Ltd*, Sandbach, UK.
Programming in PHP for telecoms company. Designed and coded new website selling isolated consumer product. Developed market-leading algorithms to price telephone numbers patterns based on memorability of both numeric patterns and alphadial patterns http://www.flextel.com/numbers/.

Sept, 2009 **Physics Studentship**, *University of Durham*, Durham.
Programming in MATLAB to simulate Rydberg atoms and their interactions.

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Open Source Projects

2016 **Superbar**, *Multi-colour bar charts for MATLAB, including customisable error bars and significance comparisons*, available on GitHub, and through MATLAB FileExchange.

2016 **MOPI: MATLAB/Octave Package Installer**, *A simple and flexible package manager for both MATLAB and Octave*, available on GitHub.

2013–2015 **MATLAB Schemer**, *A colour scheme manager for MATLAB*, available on GitHub, and through MATLAB FileExchange.

2013 **Colorlab**, *Perceptually uniform colormap generation*, available on GitHub.

Grants, honors & awards

2015 Placed 57th out of 1049 in the National Data Science Bowl plankton species classification challenge, hosted by Kaggle.

2014 Placed 16th out of 504 in the American Epilepsy Society Seizure Prediction Challenge, hosted by Kaggle.

2013 Winner of "Most Viable Business Idea" award, Amazon Scotland Hackathon 2013.

2011 Awarded a 4-year scholarship by the University of Edinburgh School of Informatics Doctoral Training Centre in Neuroinformatics, with funding from grants EP/F500385/1 and BB/F529254/1 from the UK Engineering and Physical Sciences Research Council (EPSRC), UK Biotechnology and Biological Sciences Research Council (BBSRC), and the UK Medical Research Council (MRC).

2007 Awarded the Sandbach School *Boarders Trophy for Excellence in Mathematics*.

Publications

Journal articles

Aug, 2016 Janelle M. P. Pakan, Scott C. Lowe, Evelyn Dylda, Sander W. Keemink, Stephen P. Currie, Christopher A. Coutts, Nathalie L. I. Rochefort, (2016, August), "Behavioral-state modulation of inhibition is context-dependent and cell type specific in mouse visual cortex", *eLIFE*. DOI: 10.7554/eLife.14985.

Sept, 2015 Michel Besserve, Scott C. Lowe, Nikos, K. Logothetis, Bernhard Schölkopf, Stefano Panzeri (2015, September), "Shifts of gamma phase across primary visual cortical sites reflect dynamic stimulus modulated information transfer", *PLOS Biology*. DOI: 10.1371/journal.pbio.1002257.

— Scott C. Lowe, Daniel Zaldivar, Yusuke Murayama, Mark C. W. van Rossum, Nikos K. Logothetis, Stefano Panzeri (to be submitted), "Lamina and Frequency Distribution of Information in Primary Visual Cortex".

— Sander W. Keemink*, Scott C. Lowe*, Janelle M. P. Pakan, Mark C. W. van Rossum, Nathalie L. Rochefort (in preparation), "FISSA: Fast 2-photon signal extraction and separation".

— Scott C. Lowe, Xing Chen, Alex Thiele, Mark C. W. van Rossum, Stefano Panzeri (in preparation), "Changes in V1 and V4 encoding of visual contrast during perceptual learning".

— Scott C. Lowe, Finlay Maguire, Gavin Gray (in preparation), "Predicting the onset of epileptic seizures from intracranial-EEG: which features are most useful".

Talks

May, 2015 Scott C. Lowe (2015, May),"What does LFP encode?". Presented at the *CINPLA Workshop: "Inferring network activity from LFPs"*, University of Oslo, Oslo, Norway.

Poster Presentations

Apr, 2015 Scott C. Lowe, *et al.* (2015, April), "Cortical dynamics across V1 laminae generate independent frequency channels encoding visual information". Presented at the *BNA2015: Festival of Neuroscience*, Edinburgh, UK. Poster Reference: P2-C-029.

Nov, 2014 Scott C. Lowe, *et al.* (2014, November), "Different cortical layers in V1 encode different visual information in different frequency bands". Presented at the *2014 Meeting of the Society for Neuroscience*, Washington DC, USA. Program No. 532.19.

July, 2014 Scott C. Lowe, *et al.* (2014, July), "Quantification of the Laminar and Frequency Structure of Information in Primary Visual Cortex". Presented at the *9th FENS Forum of Neuroscience*, Milan, Italy. Abstract number FENS-2860.

July, 2014 Scott C. Lowe, *et al.* (2014, July), "Quantification of the Laminar and Frequency Structure of Information in Primary Visual Cortex". Presented at the *AREADNE 2014 session*, Santorini, Greece.

Nov, 2013 Scott C. Lowe, *et al.* (2013, November), "Decoding spiking activity in V4, but not V1, correlates with behaviour in perceptual learning". Presented at the *2013 Meeting of the Society for Neuroscience*, San Diego, USA. Program No. 555.11.

July, 2013 Scott C. Lowe, *et al.* (2013, July), "Decoding spiking activity in V4, but not V1, correlates with behavioural performance in perceptual learning task". Presented at the *Twenty Second Annual Computational Neuroscience Meeting: CNS*2013*, Paris, France. *BMC Neuroscience* 2013, **14**(Suppl 1):P385 doi:10.1186/1471-2202-14-S1-P385.

Teaching Experience

Autumn, 2013 **Neural Computation**, *Tutor*, University of Edinburgh.

Computer skills

Languages	Python, MATLAB, Bash
Development	Git, TDD, continuous integration
ML	Theano, Tensorflow, Scikit-learn
Web	PHP, Javascript, AJAX, HTML5, CSS3
Markup	Markdown, YAML, JSON, XML
Database	SQL, MySQL
Cloud comp.	Amazon EC2

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Responsibilities

2010–2011 Durham University Humanist and Secularist Society, Webmaster

2009–2011 Collingwood College JCR, Webmaster

2009–2011 University of Durham Orienteering Club, Webmaster

References

- Dr. Mark van Rossum,
  School of Informatics,
  University of Edinburgh,
  Edinburgh, EH8 9AB, UK
  mvanross@inf.ed.ac.uk

- Prof. Stefano Panzeri,
  Center for Neuroscience and Cognitive Systems,
  Istituto Italiano di Technologia,
  Bettini 31, Rovereto (Tn), Italy
  stefano.panzeri@iit.it

- Dr. Nathalie Rochefort,
  Centre for Integrative Physiology,
  University of Edinburgh,
  Edinburgh, EH8 9XD, UK
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- Additional references available on request.