

Recent placements and projects in the CNCR

2015-16

Motion trajectory prediction using an EEG brain-computer interface – Dr Dietmar Heinke

Brain computer interface control of a haptic device – Dr Dietmar Heinke

Modelling the effect of evidence accumulation on the ventriloquist effect: A comparison of the Bayesian Causal Inference model and the Drift Diffusion model – Professor Uta Noppeney

Spatial reasoning in human tool use – Dr Dietmar Heinke

Dexterity and Tool use in Artisans: A computational model – Professor Chris Baber

Classification of sleep stages from fMRI – Dr Andrew Bagshaw

Decision making for motor control under risk – Professor Jeremy Wyatt

Global-to-local processing of visual information affects visually-guided manual reaching – Dr Dietmar Heinke

Optimal gaze control through Reinforcement Learning – Professor Jeremy Wyatt

MatLab implementation of Differential evolution Markov chain Monte Carlo (DE-MCMC) algorithm: A demonstration with the dual-distribution model of the Autism Spectrum Quotient (AQ) – Dr Dietmar Heinke

Investigating negative BOLD responses both within and between sensory modalities – Dr Stephen Mayhew

Modelling motor learning and control for grip force – Professor Jeremy Wyatt

The impact of motor noise on motor learning under reward and punishment – Dr Joseph Galea

Estimating limb stiffness during adaptation of reaching movements – Professor Chris Miall

Interference of repetitive tool action in bimanual hand movement – Professor Chris Baber

Learning three-dimensional Visuomotor rotations – Dr Sang-Hoon Yeo

Gaze control for grasping – Professor Jeremy Wyatt

Perturbing arm reaching movements in 3 dimensions using the 3bot and Oculus Rift headset – Professor Chris Miall

2014-2015

The effect of sleep fragmentation on memory retention – Dr Bernhard Staresina and Dr George Balanos

Consciousness and its connection to artificial intelligence – Dr Ulrik Beierholm and Professor John Barnden

NAO robot human motion learning – Professor Chris Miall

Classification image of lights and sounds in temporal order judgement task – Dr Massimiliano di Luca

Non-parametric clustering for data analysis – Professor Aleš Leonardis

Experimental design and setup to test the role of attentional cues location in out of body experiences and feeling of presence – Dr Massimiliano Di Luca

Discovering how humans emotionally respond to robots – Dr Massimiliano Di Luca

tDCS; too variable to be reliable? Evidence from a semantic interference paradigm – Dr Andrew Olson

Reactivation of memory during wakefulness – Dr Bernhard Staresina

Investigating the structure-function relationship of attention networks – Dr Amanda Wood

Multisensory Integration through time: Corroborating previous research and further detailing time-related effects - Dr Ulrik Beierholm and Professor John Barnden

A computational model of the four constraint theory on tool use – Dr Dietmar Heinke

A touch of humanity: A study of the rubber hand illusion using robotic visuals – Dr Massimiliano Di Luca

A computational model of human tool use research – Dr Dietmar Heinke

Eye fixations in action recognition – Professor Aleš Leonardis

Pinching virtual objects – Dr Massimiliano Di Luca

An EEG lie detection on the fringe of awareness and psychopathic traits – Professor Howard Bowman

Supervisors for 2016-2017

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You might find it useful to look up staff member profiles in the School of Psychology and School of Computer Science.

Psychology: <http://www.birmingham.ac.uk/schools/psychology/people/index.aspx>

Computer Science: <http://www.cs.bham.ac.uk/about/people/academic>

Sport and Exercise Science: <http://www.birmingham.ac.uk/schools/sport-exercise/staff/index.aspx>

The CNCR also has its own pages:

<http://www.birmingham.ac.uk/research/activity/cncr/index.aspx>

Feel free to contact our course administration team, if you need more information: pg-psychology-admissions@contacts.bham.ac.uk.

If you would like to know more about life in Birmingham, you can contact the CNCR postgraduate mentor, Benjamin Crossey, a CNCR MSc graduate, now PhD researcher at the University of Birmingham. Email: BPC229@bham.ac.uk

Suggested reading list

Linear algebra

- any college level introduction to linear algebra manual

Matlab

- Wallisch, Losignan, Benayoun Baker Dickey, (2014) Matlab for neuroscientists, Academic press
- Borgo, soranzo, grassi (2012) Matlab for psychologists, springer
- or any other good book/online resource

Introduction to computational methods

- Kreyszig E., (2005). Advanced Engineering Mathematics, John Wiley and Sons
- Mackay, D. (2003). Information Theory, Inference and Learning Algorithms, Cambridge University Press.
- Bishop, C. (1995). Neural Networks for Pattern Recognition. Oxford, U.K.: Oxford University Press.

Foundations (Journal club)

- Christopoulos VN, Schrater PR (2009) Grasping Objects with Environmentally Induced Position Uncertainty. PLoS Comput Biol 5(10): e1000538
- Gosselin F, Schyns PG, Bonnar L, Paul L (2001) Superstitious Perceptions, 23rd annual conference of the cognitive science society
- Langton, C G. (1986) Studying artificial life with cellular automata, Physica, 22D 120-149
- Ommer B, Buhmann JM (2010), Learning the Compositional Nature of Visual Object Categories for Recognition, IEEE transactions on pattern analysis and machine intelligence, 32, 3, 501-
- Picard RW, Vyzas E, Healey j(2001) Toward Machine Emotional Intelligence: Analysis of Affective Physiological State, IEEE transactions on pattern analysis and machine intelligence, VOL. 23, NO. 10, 1175-
- Pinzon-Morales R-D, Hirata Y (2014) A bi-hemispheric neuronal network model of the cerebellum with spontaneous climbing fiber firing produces asymmetrical motor learning during robot control, Front Neural Circuits. 2014; 8: 131.
- Ritter SM, Strick M, Bos MW, Van Baaren RB, Dijksterhuis AP (2012) Good morning creativity: task reactivation during sleepenhances beneficial effect of sleep on creative performance, creativity, 21, 643-647
- Sato Y, Kording, KP (2014) How much to trust the senses: Likelihood learning, Journal of vision 14(13):13
- Scheirer J, Fernandez R, Klein J, Picard RW (2002) Frustrating the user on purpose: a step toward building an affective computer, Interacting with computers, 14, 2, 93-118
- Smith, Ghazizadeh, Shadmehr (2006) Interacting Adaptive Processes with Different Timescales Underlie Short-Term Motor Learning, Plos Biology
- Strauss S, Heinke D (2012) A robotics-based approach to modeling of choice reaching experiments on visual attention, Front. Psychol 3:105
- Zaidel A, Ma WJ, Angelaki DE (2013) Supervised calibration relies on the multisensory percept, Neuron. Dec 18;80(6):1544-57

Mind brain and models

- Trappenberg T (2009) Fundamentals of Computational Neuroscience, Oxford university press (Introduction and Chapter 1)
- Marr D (2010) Vision, MIT Press (chapter 1 & 2)
- Kinll D Pouget A (2004) The Bayesian brain, Trends in neuroscience, 27 12, 712-
- Bolton W (2002) Control systems, Elsevier (chapter 1)
- Ermentrout B, Terman D (2010) foundations of mathematical neuroscience, Springer (chapters 1, 2 & 4)

Advanced robotics

- Siciliano B, Sciavicco L Villani L Oriolo G (2010) robotics: modelling planning and control, springer

Research Placement & Research Project*

- Howell, D. (2011). Statistical Methods for Psychology, 8th Edition. Cengage.
- Bell, P., Staines, P. & Mitchell, J. (2001). Evaluating, doing and writing research in Psychology. London: Sage.
- **Baumeister, R. F., & Leary, M. R. (1997).** Writing narrative literature reviews. *Review of General Psychology*, 1, 311–320.
- **Beins, B. C., & Beins, A. M. (2008).** *Effective writing in psychology: Papers, posters, and presentations*. Blackwell: Oxford.
- **Hartley, J. (2008).** *Academic writing and publishing: A practical handbook*. Abingdon: Routledge.
- **Smyth, T. R. (2004).** *The principles of writing in psychology*. Basingstoke: Palgrave Macmillan.
- **Wood, C., Giles, D., & Percy, C. (2012).** *Your psychology project handbook: Becoming a researcher* (2nd ed.). Essex: Pearson Education Limited.

*For these modules, you will also be expected to engage in extensive, critical reading of the academic sources underpinning your research. Your research supervisors will often provide you with some seed references to get you started.

Proposing Research in Psychology / Transferable Skills

For these modules, there is no set reading list. Instead, you are advised to engage in general study of the key scientific thinking, writing, and presentation skills (see above),

For all other modules reading lists will be available at the beginning of the module