Daniel K. Wood

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EDUCATION

PhD Neuroscience 2009-2013
University of Western Ontario

"Reaching for the light: The prioritization of conspicuous visual stimuli for reflexive target-directed reaching." Thesis advisor: Melyvn A. Goodale

MSc Neuroscience 2007-2009
University of Western Ontario

"The effects of ambiguity and trial order on the selection of goal-directed actions." Thesis advisor: Melvyn A. Goodale

BA Philosophy 2001-2006
Brigham Young University

"Neuro-existentialism: The existential significance of the material body." Academic advisor: Mark A. Wrathall

EXPERIENCE

Data Science Fellow 2020-Present
Sharpest Minds

- Developed a python package and web app that provides decision support for diabetics. (https://github.com/danielkentwood/sugartime)
- Collaborating with CTO at ProteinQure.

Scientist | Human Factors Consultant 2019-2020
Exponent, Inc.

- Performed human factors consulting (litigation support, forensics, product safety/usability) for several Fortune 500 companies.
- Project management (budgeting, billing, quality control, designing inspection protocols, coordinating all client communication, project pacing, writing expert opinions). Managed 15 projects with team sizes ranging from 4 to 12 consultants.
- For projects I managed, I maintained a perfect record of favorable legal outcomes for clients. Also maintained a highly efficient project realization (i.e., hours billed divided by hours worked) of >99%.
- Developed python apps for automating critical tasks, resulting in up to 10X speedups in execution time and saving clients thousands of dollars.

Postdoctoral Fellow 2014-2019
Northwestern University

- Dept. of Neurobiology (Mark Segraves) and Rehabilitation Institute of Chicago (Konrad Kording): Studying visual, motor, and attention-related processing in frontal eye fields of non-human primates (*macaca mulata*).
- Dept. of Neurobiology (J.C. Cang and Mark Segraves): Studying cortical and subcortical oculomotor circuits in mice.

- Developed novel eye tracking rigs and several experimental control applications (using C++ and python) for monkeys and mice.
- Used PCA, clustering, time-series analysis, and GLM on a 3 TB data set of behavioral and neural recordings to understand how visual preferences of neurons change depending on the behavioral state of the animal.(https://github.com/danielkentwood/NERF).
- Sterile surgery (e.g., craniotomy, electrode array placement, sutures, post-op care), behavioral training (e.g., operant conditioning) and medical imaging (e.g., MRI and CT) of nonhuman primates.
- Surgery (e.g., anaesthesia, intracerebral injection of dyes and viral constructs, perfusion, slice preparation), behavioral training, and analysis (e.g., kinematics, eye tracking, confocal microscopy) of mice.

Guest Lecturer, Fundamentals of Neurobiology II 2014-2019
Northwestern University

- Lecture topics: dorsal extrastriate visual system; sensorimotor integration; memory systems and the medial temporal lobe

Research Fellow Summer 2016
Allen Brain Institute Computational Neuroscience Workshop

- Attended a competitive summer fellowship focused on computational neuroscience topics.
- Wrote python software that pulls neural tracing experiments from the Allen Brain Institute database and visualizes neural pathways in a 3D glass brain. Project was awarded "Best Visualization".
- GitHub repo: https://github.com/danielkentwood/vis3DConnect

Product Reviewer 2014-2016
Marbles: The Brain Store

- Provided expert analysis and education on the brain-related benefits of various products from Marbles: The Brain Store.

Instructor/Coordinator for Psych 280E Research Methods 2007-2009
University of Western Ontario

- Instructor: Taught the lab portion for 21 students. Lectured (two hours weekly) on experimental design and statistical analysis, administered tests, held office hours, and graded tests and papers.
- Coordinator: Responsible for designing the curriculum and overseeing the instruction in 10 labs. Also created and maintained various web materials for the course.

Teaching Assistant for Phil 305 Predicate Logic 2006
Brigham Young University

- Taught classes, held office hours, graded coursework and term papers.

PEER-REVIEWED JOURNAL PUBLICATIONS [statistics]

15. Glaser, J.I., Wood, D.K., Lawlor, P., Segraves, M.A., and Kording, K.P. (2020). "From prior information to saccade selection: evolution of frontal eye field activity during natural scene search.", *Cerebral Cortex*, **30(3)**, pp. 1957-1973.
14. *Wood, D.K.,*Chouinard, P.A., Major, A.J., and Goodale, M.A. (2017). "Sensitivity to biomechanical limitations during postural decision-making depends on the integrity of posterior superior parietal cortex.", *Cortex*, **97**, pp. 202-220.
13. Gu, C., Wood, D.K., Gribble, P.L., and Corneil, B.D. (2016). "A trial-by-trial window into sensorimotor transformations in the human motor periphery.", *Journal of Neuroscience*, **36(31)**, pp. 8273-8282.

12. Ramkumar, P., Lawlor, P.N., Glaser, J.I., Wood, D.K., Phillips, A.N., Segraves, M.A., and Kording, K.P. (2016). "Feature-based attention and spatial selection in frontal eye fields during natural scene search.", *Journal of Neurophysiology*, **116(3)**, pp. 1328-1343.

11. *Glaser, J.I., *Wood, D.K. (Co-First Author), Lawlor, P.N., Ramkumar, P., Caddigan, S., Phillips, A.N., Kording, K.P., and Segraves, M.A. (2016). "The role of expected reward in frontal eye field during natural scene search", *Journal of Neurophysiology*, **116(2)**, pp. 645-657.

10. Goonetilleke, S.C., Katz, L., Wood, D.K., Gu, C., Huk, A., and Corneil, B.D. (2015). "Cross-species comparison of anticipatory and stimulus-driven neck muscle activity", *Journal of Neurophysiology*, **114(2)**, pp. 902-913.

9. Wood, D.K., Gu, C., Corneil, B.D., Gribble, P.L., and Goodale, M.A. (2015). "Transient visual responses reset the phase of low-frequency oscillations in the skeletomotor periphery", *European Journal of Neuroscience*, **42(3)**, pp. 1919-1932.

8. Chapman, C.S., Gallivan, J.P., Wood, D.K., Milne, J.L., Ansari, D., Culham, J.C., and Goodale, M.A. (2014). "Counting on the motor system: Rapid action planning reveals the format- and magnitude-dependent extraction of numerical quantity", *Journal of Vision*, **14**, pp. 1-19.

7. Milne, J.L., Chapman, C.S., Gallivan, J.P., Wood, D.K., Culham, J.C., and Goodale, M.A. (2013). "Object connectedness influences perceptual comparisons but not the planning or control of rapid reaches to multiple goals", *Psychological Science*, **24**, pp. 1456-1465.

6. Wood, D.K., Gallivan, J.P., Chapman, C.S., Milne, J.L., Culham, J.C., and Goodale, M.A. (2011). "Visual salience dominates early visuomotor competition in reaching behavior", *Journal of Vision*, **11**, pp. 1-11.

5. Gallivan, J.P., Chapman, C.S.,Wood, D.K., Milne, J.L., Culham, J.C., Ansari, D., and Goodale, M.A. (2011). "One to four, and nothing more: Non-conscious parallel object individuation in action", *Psychological Science*, **22**, pp. 803-811.

4. Wood, D.K. and Goodale, M.A. (2011). "Selection of wrist posture in conditions of motor ambiguity", *Exp Brain Res*, **208**, pp. 607-620.

3. Chapman, C.S., Gallivan, J.P., Wood, D.K., Milne, J.L., Culham, J.C., and Goodale, M.A. (2010). "Short-term motor plasticity revealed in a visuomotor decision-making task", *Behavioral Brain Research*, **214**, pp. 130-134.

2. Chapman, C.S., Gallivan, J.P., Wood, D.K., Milne, J.L., Culham, J.C., and Goodale, M.A. (2010). "Reaching for the unknown: multiple target encoding and real-time decision-making in a rapid reach task", *Cognition*, **116**, pp. 168-176.

1. Gallivan, J.P. and Wood, D.K. (2009). "Simultaneous encoding of potential grasping movements in macaque AIP", *Journal of Neuroscience*, **29**, pp. 12031-12032.

GRANTS

- National Institutes of Health (NIH) F32 NRSA, "Natural dynamics of attention in primate prefrontal cortex", $60,000 (Postdoctoral, 6/17 - 6/18).

- National Institutes of Health (NIH) T32, "Cortical and subcortical mechanisms of reflexive orienting", $90,000 (Postdoctoral, 6/15 - 5/17).

- Queen Elizabeth II Graduate Scholarship in Science and Technology (QEIIGSST), "The neural correlates of motor ambiguity", $15,000 (PhD, 09/12 - 4/13).
- Canadian Institute of Health Research (CIHR) CGS Doctoral Research Award, "The effect of stimulus ambiguity on the selection of goal-directed actions", $105,000 (PhD, 09/09 - 4/12).
- Canadian Institute of Health Research (CIHR) CGS Master's Award, "The selection of grip posture while grasping objects at ambiguous orientations is susceptible to priming", $17,500 (MSc, 09/08 - 4/09).

INVITED/REFEREED TALKS

9. Vision Sciences Society, St. Pete Beach, FL, 5/18
8. Gordon Research Seminar on Eye Movements, Lewiston, ME, 7/17
7. COSYNE (main meeting), Salt Lake City, 2/17. There was a 5% acceptance rate for talks. Also received $1000 travel award.
6. Advanced Topics in Vision Seminar Series, Northwestern University, 10/15.
5. Gordon Research Conference on Eye Movements, Bentley University, 07/15. One of four postdocs invited to speak at the conference.
4. Advanced Topics in Vision Seminar Series, Northwestern University, 01/15.
3. Seminar at Center for Perceptual Systems, UT Austin, 09/13.
2. Canadian Action and Perception Network (CAPNET) conference, Adèle, Quebec, 09/11.
1. Society for Neuroscience Nanosymposium ("Neural Control of Grasping"), Chicago, IL, 10/09.

SELECTED POSTERS

9. Wood, D.K., Glaser, J., Ramkumar, P., Lawlor, P., Körding, K., & Segraves, M., 2016, Receptive field maintenance or compression? It depends on the saccadic intention. Gordon Research Conference on the Neurobiology of Cognition, Newry, Maine
8. Wood, D.K., Berthiaume, E., Ramkumar, P., Lawlor, P., Glaser, J., Phillips, A., Körding, K., & Segraves, M., 2015, The frontal eye fields read out, but do not construct, a priority map. SfN, Chicago
7. Wood, D.K., Ramkumar, P., Lawlor, P., Glaser, J., Phillips, A., Caddigan, S., Körding, K., & Segraves, M., 2014, Task-relevant features predict gaze behavior but not neural activity in FEF during natural scene search. SfN, Washington, D.C.
6. Wood, D.K., Chapman, C.S., Gallivan, J.P., Milne, J.L., Culham, J.C., & Goodale, M.A., 2013, The temporal decay of visual salience in a compelled response task. Gordon Research Conference on Eye Movements, Stonehill College, Easton, MA
5. Wood, D.K., Cruse, D., & Goodale, M.A., 2012, Electrophysiological correlates of biomechanically induced bistability of preferred arm postures. SfN, New Orleans
4. Wood, D.K., Chapman, C.S., Gallivan, J.P., Milne, J.L., Culham, J.C., & Goodale, M.A., 2012, Implicit extraction of probability in formation from arbitrary color cues. ECVP, Sardinia, Italy

3. Wood, D.K., Buckingham, G., Anwar, A., & Goodale, M.A., 2011, Foreknowledge of sequence optimizes fingertip force prediction in the absence of distinguishing visual cues. SfN, Washington, D.C.

2. Wood, D.K., Chapman, C.S., Gallivan, J.P., Milne, J.L., Culham, J.C., & Goodale, M.A., 2010, Visual salience of potential targets overrides spatial probabilities in a rapid visuomotor task. SfN, San Diego

1. Wood, D.K., & Goodale, M.A., 2009, The effects of response ambiguity and trial order on the selection of goal-directed actions. VSS, Naples, Florida

THESES SUPERVISED

1. Asia Giammarco – MSc, 2016. "Measuring distractibility in a natural scene search task." *Northwestern University*

2. Karim Farrag – MSc, 2015. "How does filtered visual energy affect search strategies in natural scenes?" *Northwestern University*

3. Emily Berthiaume – MSc, 2015. "Impact of target presentation mode on Frontal Eye Field activity." *Northwestern University*

4. Alex Major – Honors BSc, 2013. "Localization of brain areas responsible for wrist posture selection in ambiguous situations." *University of Western Ontario*

5. Daryl Chambers – Honors BSc, 2011. "Lifting objects that vary in size and weight." *University of Western Ontario*

SYNERGISTIC ACTIVITIES

- *Journal Referee*: Cerebral Cortex, Journal of Neuroscience, European Journal of Neuroscience, Scientific Reports, Journal of Neurophysiology, Experimental Brain Research, Journal of Cognitive Neuroscience, Current Eye Research, Psychonomic Bulletin and Review, Frontiers in Human Neuroscience, PLOS One

- *Society Membership*: Society for Neuroscience, Vision Sciences Society, Society for the Neural Control of Movement

- Student-Hosted Seminar Series Committee, Northwestern University

- Co-program organizer and mentor for the NEURON undergraduate program at Northwestern University.

- Mentor for Junior Science Club (after-school science mentoring for elementary school students), *Science in Society*, Northwestern University