

Curriculum Vitae

Nicholas Butko, Ph.D.
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Education:

- Ph.D. UC San Diego dept. of Cognitive Science. 12/2010:
Advanced to candidacy, 6/2008.
Research exam (masters equivalent), 6/2006.
Began program, 9/2004.
Overall Graduate GPA: 3.970.

Awarded 2011 Jean Fort Dissertation prize by UC San Diego Office of Graduate Studies.

- B.S. in Computer Science, B.S. in Cognitive Science, UC San Diego's Revelle College, 2004.
Attended 9/2000 - 6/2004.
Magna Cum Laude, Regent's Scholar, Jacobs Scholar, National Merit Scholar.
Undergraduate Overall GPA: 3.794, Computer Science GPA: 3.964, Cognitive Science GPA: 3.962.
GRE: Math: 800 (92nd %ile), Verbal: 710 (97th %ile), Writing: 5.5 (84th %ile), CS: 810 (82nd %ile).

Research:

Intramural

- 9/2005–12/2010: UCSD Machine Perception Laboratory.
- 9/2004–6/2005: UCSD Natural Computation Laboratory.

Extramural

- 6/2009–9/2009: Intel Research, Santa Clara, California.
- 6/2008–9/2008: Intel Research, Santa Clara, California.
- 6/2006–8/2006: Advanced Telecommunications Research (ATR), Kyoto, Japan.
- 7/2005: Friedrich Schiller University, Jena, Germany.

Publications:

In Preparation

- **Butko, N.J.**, Movellan, J.R., “Learning to Look” (working title). Extended journal version of 2010 ICDL conference publication. (*In Preparation*).
- **Butko, N.J.**, Fasel, I.R., Movellan, J.R., “Learning About Humans in the First 6 Minutes of Life” (working title). Short communication version of *Active Perception*, Chapter 7 (*In Preparation*).

Ph.D. Thesis

- **Butko, N.J.** *Active Perception*, Ph.D. Thesis, UC San Diego dept. of Cognitive Science (2010).

Journal Publications:

- **Butko, N.J.**, Movellan, J.R., “Detecting Contingencies: An Infomax Approach,” *Neural Networks* 23(8–9):973–984 (2010).
- **Butko, N.J.**, Movellan, J.R., “Infomax Control of Eye Movements,” *IEEE Transactions on Autonomous Mental Development, Special Issue on Active Learning and Intrinsically Motivated Exploration in Robots*, 2(2):91–107 (2010).
- **Butko, N.J.**, Triesch, J., “Exploring the Role of Intrinsic Plasticity for the Learning of Sensory Representations,” *Neurocomputing*, 70(7-9):1130–1138 (2007).

Refereed Conference Publications

- **Butko, N.J.**, Theocharous, G., Philipose, M., Movellan, J.R., “Automated facial affect analysis for one-on-one tutoring applications.” *Proceedings of the 9th IEEE Conference on Automatic Face and Gesture Recognition*, 2011.
- Wu, T., **Butko, N.J.**, Ruvolo, P. Whitehill, J. Bartlett, M.S., Movellan, J.R. “Action Unit Recognition Transfer Across Datasets.” *Proceedings of the 9th IEEE Conference on Automatic Face and Gesture Recognition, Workshop on Facial Expression Recognition and Analysis Challenge*, 2011.
- Littlewort, G., Whitehill, J., Wu, T., **Butko, N.J.**, Ruvolo, P., Movellan, J.R., Bartlett, M.S. “The motion in emotion – a CERT based approach to the FERA emotion challenge.” *Proceedings of the 9th IEEE Conference on Automatic Face and Gesture Recognition, Workshop on Facial Expression Recognition and Analysis Challenge*, 2011.
- **Butko, N.J.**, Movellan, J.R., “Learning to Look,” *Proceedings of the 2010 IEEE International Conference on Development and Learning*, 70–75 (2010).
- **Butko, N.J.**, Movellan, J.R., “Optimal Scanning for Faster Object Detection,” *Proceedings of the 2009 IEEE Conference on Computer Vision and Pattern Recognition*, 2751–2758 (2009).
- Wu, T., **Butko, N.J.**, Ruvolo, P., Bartlett, M., Movellan, J.R., “Learning to Make Facial Expressions,” *Proceedings of the 2009 IEEE International Conference on Development and Learning*, 1–6 (2009).
- **Butko, N.J.**, Movellan, J.R., “IPOMDP: An Infomax Model of Eye-Movement,” *Proceedings of the 2008 IEEE International Conference on Development and Learning*, 139–144 (2008).
- **Butko, N.J.**, Zhang, L., Cottrell, G.W., Movellan, J.R., “Visual Saliency for Robot Cameras,” *Proceedings of the 2008 IEEE International Conference on Robotics and Automation*, 2398–2403 (2008).
- **Butko, N.J.**, Movellan, J.R., “Learning to Learn,” *Proceedings of the 2007 IEEE International Conference on Development and Learning*, 151–156 (2007).

- Wiratanaya, A., Lyons, M., **Butko, N.J.**, Abe, S. “iMime: An Interactive Character Animation System for use in Dementia Care,” *Intelligent User Interfaces* (2007).
- Bajramovic, F., Mattern, F., **Butko, N.J.**, Denzler, J., “A Comparison of Nearest Neighbor Search Algorithms for Generic Object Recognition,” *Advanced Concepts for Intelligent Vision Systems* (2006).
- **Butko, N.J.**, Triesch, J., “Exploring the Role of Intrinsic Plasticity for the Learning of Sensory Representations,” *European Symposium on Artificial Neural Networks* (2006).

Conference Workshop Publications

- Theocharous, G., **Butko, N.J.**, Philipose, M., “Designing a Mathematical Manipulatives Tutoring System Using POMDPs,” *Proceedings of the POMDP Practitioners’ Workshop: Solving Real-world POMDP Problems, International Conference on Automated Planning and Scheduling (ICAPS)*, Toronto, May 2010.
- Beckwith, R., Theocharous, G.T., Philipose, M., **Butko, N.J.**, Schmied, N., Mathew, V., “IRL: Virtual Reality and Physical Manipulatives,” *Proceedings of the Workshop on Next Generation of HCI and Education, CHI (ACM Conference on Human Factors in Computing Systems)*, Atlanta GA, April 2010.
- Theocharous, G., Beckwith, R., **Butko, N.J.**, Philipose, M., “Tractable POMDP Planning Algorithms for Optimal Teaching in SPAIS,” *IJCAI Workshop on Plan, Activity, and Intent Recognition (PAIR)*, (2009).

Tech Reports

- **Butko, N.J.**, “Generative & Discriminative Naive Bayes,” *Technical Report, MPLAB.UCSD-1* (2007).

Unpublished, Presented Work:

- **Butko, N.J.**, Fasel, I.R., Movellan, J.R., “Learning about Humans During the First 6 Minutes of Life,” *Fifth International Conference on Development and Learning (ICDL5)*, Bloomington, Indiana (2006).

Service:

Science:

- 2011 Program Committee member, International Conference on Development and Learning.
- 2010 Publications Chair, International Conference on Development and Learning.
- Peer Review (journal): Neural Computation, IEEE Transactions on Autonomous Mental Development.
- Peer Review (conference): International Conference on Development and Learning, Conference on Automatic Face and Gesture Recognition.

Outreach:

- Spring 2011: Invited talk, University of Alberta Reinforcement Learning & AI group.
- Spring 2011: Invited talk, UCSD Center for Research in Computing & the Arts.
- Winter 2010: Invited talk, ID Analytics.
- Fall 2009: 4H SET Career Day talk on careers in Robotics Research.
- Spring 2009: Invited talk, Walt Disney Imagineering.

- Winter 2009: Invited demo, TED conference.
- Winter 2009: San Diego Science Festival volunteer, lectured at local middle schools.
- Fall 2008: Invited talk, 6Sight conference.

Open Source:

- NMPT (Nick's Machine Perception Toolbox), author.
- OpenCV (Computer Vision), contributor.
- ROS (Robot Operating System), contributor.
- rosjava, maintainer, 2008-2010.
- OpenNI (Natural Interaction), contributor.

Teaching:

Guest Lecturer

- Spring 2010: Cogs 1: Introduction to Cognitive Science.
- Winter 2010: Cogs 1: Introduction to Cognitive Science.
- Winter 2009: Cogs 91: Students for Cognitive and Neuroscience Seminar.

Teaching Assistant

- Fall 2007: Cogs 109: Modeling and Data Analysis.
- Fall 2006: Cogs 109: Modeling and Data Analysis.
- Winter 2006: Cogs 1: Introduction to Cognitive Science.
- Winter 2005: Cogs 108E: Neural Network Models of Cognition.

Department:

- 2009–2010: Grad Coordinator.
- 2008–2009: Grad Student Representative.
- 2007–2008: Wa (weekly seminar series) Organizer.
- 2006–2007: Distinguished Speaker Coordinator.
- 2004–2005: Social Coordinator.

Fellowships:

- 10/2005-1/2008: Integrative Graduate Education and Research Traineeship (IGERT) fellow (NSF).
- 6/2006-8/2006: East Asia Pacific Summer Institutes (EAPSI) fellow – NSF/JSPS (Japanese Society for the Promotion of Science).