Michael Slugocki

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Objective

To improve inference through the application of rigorous statistical methods and employment of computational modelling approaches, with specific focus on image analysis.

Research Interests

Predictive modeling, classical psychophysics, machine learning, bayesian inference

Education

Computational Psychophysics - McMaster University, Hamilton, ON

Ph.D. Candidate, Psychology, Neuroscience & Behaviour *Expected:* Winter 2017

- Advisors: Dr. Patrick J. Bennett and Dr. Allison B. Sekuler
- Relevant Coursework: *Statistics and research design, Computational models and machine learning, Signal detection theory, Psychometrics*

B.Sc.(Hons), Psychology, Neuroscience & Behaviour Apr 2008

- Advisors: Dr. Terri L. Lewis and Dr. Daphne M. Maurer

Collaborative Projects

In collaboration with Faculty of Dentistry, University of Toronto 2017–present

- Designing Convolutional Neural Networks (CNNs) using PYTHON and OpenCV to assist dental radiologists in detecting and diagnosing oral diseases from radiographs.

Conference Proceedings

1. **Slugocki, M.**, Duong, C., Sekuler, A.B., & Bennett, P.J. (2016). Evaluating Temporal Interactions Between Pairs of Shapes. *Journal of Vision*, *16*(12), 796-796.
2. **Slugocki, M.**, Sekuler, A.B., & Bennett, P.J. (2015). Evaluating Phase Dependent Masking with Radial Frequency Contours. *Journal of Vision*, *15*(12), 1026-1026.
3. Beers, A., **Slugocki, M.**, Sekuler, A.B., & Bennett, P.J. (2015). Evaluating Phase Dependent Masking with Radial Frequency Contours. *Journal of Vision*, *15*(12), 1026-1026.
4. **Slugocki, M.**, Sekuler, A., & Bennett, P. (2014). Local Perturbations to a Global Radial Frequency Masker Alleviate Lateral Masking Effects. *Journal of Vision*, *14*(10), 243-243.
5. **Slugocki, M.**, Maurer, M., Peterson, M.A., & Lewis, T.L. (2013). The effect of convexity in biasing childrens perception of figures., *Child Vision Research Society*
6. **Slugocki, M.**, Maurer, M., Peterson, M.A., & Lewis, T.L. (2013). Convexity as a cue to figure-ground segmentation in childre. *Journal of Vision*, *13*(9), 718-718.

Awards/ Scholarships

Travel Awards

- PNB Departmental travel award May 2013–2016

Scholarships — McMaster University, PNB

- McMaster Senate Scholarship Sept 2012
- Norampac Inc. Undergraduate Scholarship Sept 2008–2012
- McMaster Undergraduate Scholarship Sept 2008–2011

Teaching Experience

Teaching Assistant,
Department of PNB, McMaster University 2013–present

- Coordinate instructional efforts to help students conceptualize course materials
- Prepare and lead lectures, tutorials, review sessions, and small group discussions of relevant topics
- Provide constructive written and oral feedback on student assessments, such as formal reports and in-class presentations; grading of student work
- Responsible for invigilating course examinations and enforcing administrative policies as needed

Undergraduate thesis supervisor (3QQ3/4D09)
Department of PNB, McMaster University 2013–2016

- Helped students with: research design, data collection, statistical analysis, and providing feedback on written reports

Extra-Curricular Experience

Colloquium Committee Member,
Department of PNB, McMaster University 2017–present

- Responsible for scheduling speakers, their accommodations, and relevant dealings in giving a colloquium talk to the Department of PNB at McMaster University about current research in their field of study.

Undergraduate Thesis Poster Judge,
Department of PNB, McMaster University 2013–2016

- Assessed undergraduate posters presentations for student theses based on the quality of their research and ability to answer relevant questions about their projects.

Technical Skills

Research oriented

- Generate quantitative models to represent and predict human performance on vision related tasks
- Develop and manage research design and methods used to collect data
- Responsible for independently programming and validating experimental setups
- Critically analyze and interpret experimental findings to generate novel insights
- Perform critical assessments of past and current literature to build knowledge base
- Communicate research findings through peer reviewed reports and oral presentations at international conferences
- Collaborate with colleagues on research projects to help integrate knowledge base across groups and promote cohesion among researchers from different organizations

Software

- Programming languages: Python, R, Matlab, C++, HTML, Julia
- Cloud computing: AWS EC2
- Document generation: LaTeX, Jupyter Notebook, RMarkdown, Sweave, MS Office
- Version control: GIT
- Database management: SQL
- Web based: Jekyll, Wordpress

Hardware/Apparatuses

- Microcontrollers: Arduino Uno, Arduino Mega 2560
- 4-way mirror stereoscope
- Shutter glasses with IR transmitter (VPixx Technologies)
- Pupillary distance meter (PDM Digital PD Meter)
- Photometer (SpectraScan PhotoResearch 650)

Statistics and Machine Learning

- Regression: Linear and Non-Linear, Lasso, Ridge, Stepwise, Loess
- Bayesian inference: Hierarchical Bayesian models, Monte Carlo

- Deep Learning: Convolutional Neural Networks (CNNs), Perceptrons
- Dimensionality Reduction: Principal component analysis, Factor analysis

References

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