

Ravi B. Sojitra

GitHub: [RaviSoji](#)

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EDUCATION

New York University, New York City, NY

9/2018—Present

- M.S. Applied Statistics (concentration in Computational Methods)

Rutgers University, Newark, NJ

9/2010—5/2014

- B.A. Biology and Philosophy, *summa cum laude*, GPA: 3.953/4.000
- Honors Thesis: *Age Differences in Positive and Negative Probabilistic Feedback Learning*

RESEARCH (WORK) EXPERIENCE

Cognitive and Data Science Laboratory

Rutgers University, Newark, NJ

Research Technician | Advisor: Dr. Patrick Shafto

6/2016—Present

Project: *Explainable Artificial Intelligence (DARPA XAI Program)*

- Invented a procedure to explain model predictions at the feature level for Probabilistic Linear Discriminant Analysis based classifiers.
- Derived and implemented Bayesian teaching models to explain both model predictions and image categories to human users.
- Designed Mechanical Turk experiments and evaluated the efficacy of the above Bayesian teaching models, with a team.
- Scaling the above work to “explain” both predictions and layers of deep convolutional neural networks (via decoder networks).
- **Deliverables:** 1 conference paper + poster (first author) and 1 invention disclosure.

Project: *Topological Data Analysis of Video*

- Replicated, extended, and scaled the approach by Lee, Pederson, & Mumford (2003) from image to video.
- Then ran Dirichlet Process Mixture Models for unsupervised feature learning of spatiotemporal statistics.
- Analyzed visual input by building Gabor filter banks and using Discrete Cosine & Fourier transformations.
- Implemented real time removal of horizontally and vertically oriented content for augmented reality projects.
- **Deliverables:** 2 conference posters (one first author, and one second author).

Cognitive Neuroscience Laboratory

Rutgers University, Newark, NJ

Research Assistant | Advisor: Dr. Mark A. Gluck

1/2012—6/2016

Projects: *Effects of Cognitive Aging, Exercise, Genetics on Striatal and Hippocampal dependent Learning*

- Led regular journal clubs, data presentations, and project meetings with research assistants.
- Prepared and analyzed data for grant proposals, talks, progress reports, posters, and manuscripts.
- Streamlined data pipeline: from community outreach to data collection, management, and analysis.
- Improved participant recruitment from 4 candidates/week to 35-50 candidates/week.
- Managed a team of up to 7 research assistants to collect, store, and manage behavioral, genetic, and brain imaging data from 100s of human participants.
- **Deliverables:** 4 conference presentations and 1 journal article (all first author).

SERVICE

African American Brain Health Initiative

Newark, NJ

Volunteer | >10 hours/week

1/2012—6/2016

- Prepared and delivered talks on brain health, Alzheimer’s disease, and research participation (including legal rights and ethics) at senior centers, publicly assisted housing centers, and churches in Newark, NJ.
- Oversaw, participated in, and helped organize ~15 outreach events in Newark & Greater Newark Area for audiences of 20-100 people.
- Helped mentor high school and college students to increase scientific literacy.

TECHNICAL SKILLS

Languages: Python, R, Bash scripting, JavaScript, CSS, HTML, Matlab, Java.

Markup Languages & Software: LaTeX, Markdown, Vim, Jupyter, Git, Colaboratory, Microsoft Office.

Operating Systems: Unix/Mac OSX, Linux (Ubuntu), Windows.

Public Datasets: ImageNet, MNIST, Child Affective Facial Expressions, Google Faces.

Citations for all of my publications and presentations are also posted on my [website](#).

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PUBLICATIONS

1. Vong W. K.*, **Sojitra, R. B.***, Reyes, A. Yang, S. C-H., & Shafto, P. (2018). Bayesian teaching of image categories. *Proceedings of the 40th Annual Conference of the Cognitive Science Society*.
2. **Sojitra, R. B.***, Lerner, I.*, Petok, J. R., & Gluck, M. A. (2018). Age affects reinforcement learning through dopamine-based learning imbalance and high decision noise – not through Parkinsonian mechanisms. *Neurobiology of Aging*, 68, 102-113.

CONFERENCE POSTERS

1. Vong W. K.*, **Sojitra, R. B.***, Reyes, A. Yang, S. C-H., & Shafto P. (2018, July). Bayesian teaching of image categories. Poster presented at the *40th Annual Meeting of the Cognitive Science Society*.
2. Richard, B., **Sojitra, R. B.**, Hansen, B. C., & Shafto, P. (2018, May). Defining non-linear processes in cross-orientation suppression (XOS) with steady state visual evoked potentials (SSEVPs). Poster presented at the *18th Annual Meeting of the Vision Sciences Society*.
3. Lerner, I.*, **Sojitra, R. B.***, Petok, J. R., & Gluck, M. A. (2017, November). Reinforcement learning in healthy aging: Similar behavior to Parkinson's disease, opposite mechanisms? Talk presented at the *47th Annual Meeting of the Society for Neuroscience*.
4. **Sojitra, R. B.***, Vong, W.K.*, & Shafto, P. (2017, August). The Dynamics of Human Visual Experiences. Poster presented at the *1st Annual Conference on Cognitive Computational Neuroscience*.
5. **Sojitra, R. B.**, Simon, J. R., Gluck, M. A., & Lerner, I. (2016, August). Reinforcement learning model reveals age group differences in cognitive strategies for probabilistic categorization. Poster presented at the *38th Annual Meeting of the Cognitive Science Society (Neural Computation and Psychology Workshop)*.
6. **Sojitra, R. B.**, Inyang, C., Shaw, A., & Gluck, M. A. (2016, April). Medicating hypertension may improve learning from positive probabilistic feedback, in African Americans. Poster presented at the *23rd Annual Meeting of the Cognitive Neuroscience Society*.
7. **Sojitra, R. B.**, Simon, J. R., & Gluck, M. A. (2014, November). Adult age differences in “online” learning from positive and negative probabilistic feedback. Poster presented at the *44th Annual Meeting of the Society for Neuroscience*.