Wilka Torrico De Carvalho, *Aspiring Brain Scientist*

Contact Information

Website: wcarvalho.io
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Google Scholar

Research Interests

• computational cognitive science • theoretical neuroscience • machine learning • reinforcement learning • bayesian inference • artificial neural networks • deep learning

Education

University of Southern California, Los Angeles, California USA
Viterbi School of Engineering, M.S. in Computer Science, May 2017
Advisor: Yan Liu

Stony Brook University, Stony Brook, New York USA
College of Arts and Sciences, B.S. in Physics, May 2015
Advisor: Axel Drees
Honors Thesis: "*Modeling a Detection of Internally Reflected Cherenkov Light Particle Detector for High-Multiplicity Collisions*"
Honors and Awards:
- Provost Award for Academic Excellence ($\sim 0.5\%$ of graduates chosen), 2015
- Researcher of the Month (1 school-wide per month), 2014

Brooklyn Technical High School, Brooklyn, New York USA
Diploma, Applied Physics, May 2011
Honors and Awards:
- USA National Achievement Scholarship Finalist (top 5% nationally), 2011

Honors and Awards

GEM Fellowship sponsored by IBM (declined)	2017
ICLR Travel Award	2017
NSF Graduate Research Fellowship (Neuroscience)	2015
HHMI Minority Undergraduate Research Fellowship	2014
Sigma Pi Sigma Physics Honor Society (only 2nd year student inducted)	2013
Scholar of Science, Technology, Engineering and Math	2012
NSF Louis Stokes Alliance for Minority Participation Scholar	2011
Deans List	

Conference Publications

Sanjay Purushotham*, **Wilka Carvalho***, Yan Liu. "Variational Recurrent Adversarial Domain Adaptation" *In 5th International Conference on Learning Representations* (ICLR), 2017

Sanjay Purushotham*, **Wilka Carvalho***, Yan Liu. "Variational Adversarial Deep Domain Adaptation for Health Care Time Series Analysis" *In 29th Annual Conference on Neural Information Processing Systems Workshop on Machine Learning for Healthcare* (NIPS ML4HC), 2016 **(Spotlight)**

Wilka Carvalho. "Modeling a Detection of internally reflected Cherenkov light (DIRC) Particle Detector for High-Multiplicity Collisions." *State University of New York Undergraduate Research Conference* (SURC), 2015

Invited Talks

Machine Learning Lunch Seminar. University of Southern California. (April, 2017)

Compiled May 10, 2017
* implies equal contribution

Symposium Presentations

"Variational Adversarial Deep Domain Adaptation for Healthcare Time Series" *California Institute of Technology*, Pasadena, CA, 2016. **Runner-up, best poster**

"Modeling a DIRC Particle Detector for High-Multiplicity Collisions" *23rd Annual CSTEP Statewide Student Conference*, Bolton Landing, NY, 2015. **2nd place, physics and math**

"Modeling the Cognitive Process of Attributing Traits to Others" *California Institute of Technology*, Pasadena, CA, 2014.

"Modeling Deep Brain Stimulation of Globus Palidus Internus" *22nd Annual CSTEP Statewide Student Conference*, Bolton Landing, NY, 2014.

"Modeling a Detection of internally reflected Cherenkov light (DIRC) Particle Detector for High-Multiplicity Collisions" *Stony Brook University*, Stony Brook, NY, 2014.

"Modeling Deep Brain Stimulation of Globus Palidus Internus" *University of Minnesota*, Minneapolis, MN, 2013.

Research Experience

University of Southern California, Los Angeles, California USA
Melady Lab, *November 2015 - May 2017*
Advisor: Yan Liu

Samsung and NSF funded project: "*Variational Adversarial Deep Domain Adaptation for Health Care Time Series Analysis*". Built a neural network model in Theano that employed variational methods and adversarial training to perform domain adaptation on multivariate time-series. Proposed analyses used in publications to empirically verfiy that our model (a) performed domain adaptation by creating domain-invariant representations and (b) transferrred temporal dependencies across domains.

Stony Brook Univeristy, Stony Brook, New York USA
Heavy Ion Research Group, *January 2013 - August 2015*
Advisor: Axel Drees

DOE funded project: "*Modeling a Detection of internally reflected Cherenkov light Particle Detector for High-Multiplicity Collisions*". Created a model for a DIRC particle detector and a corresponding Monte Carlo light simulator. Developed a pattern recognition algorithm that exploited physics, statistics, and geometry to identify particles from the synthetic light data. Led software development of C++ libraries and programs used for simulations and analyses.

Stony Brook Univeristy, Stony Brook, New York USA
Computational Neuroscience Group, *Fall 2014*
Advisor: Giacarlo La Camera

NSF LSAMP funded project: "*Spectral Analysis of Rodent Neural Data*". Performed spectral analyses on neural data to determine behavioral correlates of neural activity.

California Institute of Technology, Pasadena, California USA
Emotion and Social Cognition Laboratory, *Summer 2014*
Advisor: Ralph Adolphs

HHMI funded project: "*Modeling the Cognitive Process of Attributing Traits to Others*". Developed a Trait Learning Task, in which participants would learn about the distinguishing traits by observing their behavior in various situations. Built a free, web-based, general-purpose platform existed to administer online psychology experiments with user-input contingent progression.

University of Minnesota, Minneapolis, Minnesota USA
Neuromodulation Research and Technology Laboratory, *Summer 2013*
Advisor: Matthew Johnson

NIH funded project: "*Modeling Deep Brain Stimulation of Globus Palidus Internus*". Wrote a python script that interfaced with the neural network simulation environment, "Neuron", to build a computational model of the network of neurons surrounding Globus Palidus Internus, and simulated Deep Brain Stimulation and the resultant neural activity.

National Central University, Jhongli City, Taiwan
Turbulent Combustion Laboratory, *Summer 2012*
Advisor: Shenqyang Shy

Project: "*Empricial Analysis of Theories from Fluid Dynamics*". Explored boundary layer conditions, and laminar and turbulent flow of fluids through pipes of varying cross-sections.

Teaching Experience

Stony Brook University, Stony Brook, NY
Calculus Instructor, *Spring 2015*
Worked with two math professors to develop a supplementary calculus curriculum that promoted minority representation in stem majors.

Stony Brook University, Stony Brook, NY
Educational Opportunity Program Personal Tutor, *Spring 2013 - Fall 2014*
Tutored marginalized students in introductory physics and math courses.

Service

Student Volunteer, ICLR, 2017

Skills

Deep learning software: Theano, TensorFlow, Keras
Neuroscience software: Neuron
Languages: Python, C++, C, Java
Operating systems: Unix, Linux, Windows

Interests

• traveling • chess • software development • improvisational dance • deadpan humor