Wilka Torrico De Carvalho

USC Viterbi School of Engineering
Los Angeles, CA 90007
Website: *https://wcarvalho.github.io/*

wcarvalh@usc.edu
347-495-5329
Github: *https://github.com/wcarvalho*

Education

- Masters of Science in Computer Science (Viterbi School of Engineering) — May 2017
  University of Southern California (USC) — Los Angeles, CA
- Bachelors of Science in Physics — May 2015
  Stony Brook University (SBU) — Stony Brook, NY

Honors and Awards

- GEM Fellowship sponsored by IBM (declined) 2017
- ICLR Travel Award 2017
- Runner-up, SCMLS poster competition on machine learning applications 2016
- NSF Graduate Research Fellowship 2015
- SBU Provost Award for Academic Excellence (~0.5% of graduates chosen) 2015
- SBU Researcher of the Month (1 school-wide per month) 2014
- Howard Hughes Medical Institute Minority Undergraduate Research Fellowship 2014
- Sigma Pi Sigma Physics Honor Society (only 2nd year student inducted, endorsed by Alfred Goldhaber) 2013
- SBU Scholar of Science, Technology, Engineering and Math 2012
- Louis Stokes Alliance for Minority Participation Scholar 2011
- Dean's List

Conference Publications

* denotes co-first author

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

Wilka Carvalho*, Sanjay Purushotham*, 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." SUNY Undergraduate Research Conference (2015)

Computational Research Experience

University of Southern California, Computer Science Department — Los Angeles, NY
Melady (Machine Learning for the Real World) Lab — Winter 2016 –
Advisor: Yan Liu (Machine Learning)

- Led development of Python-based Theano library for an unsupervised learning algorithm that performs domain adaptation on time-series data
- Identified mid-level representation to use for empirically verifying the occurrence of domain adaptation

Stony Brook University, Physics Department — Stony Brook, NY
Heavy Ion Research Group — Winter 2013 – Summer 2015
Advisor: Axel Drees (Nuclear Physics)

DOE funded project: *"Modeling a Detection of internally reflected Cherenkov light (DIRC) Particle Detector for High-Multiplicity Collisions"*

- Created Monte Carlo to generate the Cherenkov light data of a DIRC particle detector
- Developed a pattern recognition algorithm to identify particles from the generated Cherenkov light data
- Led software development of C++ libraries and programs used for simulations and analyses

Stony Brook University, Neurobiology Department — Stony Brook, NY
NSF LSAMP Scholar in Computational Neuroscience Group — Fall 2014
Advisor: Giancarlo La Camera (Computational Neuroscience)

Project: *"Spectral Analysis of Rodent Neural Data"*

- Performed spectral analyses on neural data to determine behavioral correlates of neural activity

Caltech, Computations and Neural Systems Department — Pasadena, CA
Howard Hughes Medical Institute MURF Fellow in Emotion and Social Cognition Laboratory — Summer 2014
Advisor: Ralph Adolphs (Cognitive Neuroscience)

HHMI funded project: *"Modeling the Influence of Situational Variation on Theory of Mind"*

- Developed an experiment to study the cognitive process of interring traits about others
- Wrote a web platform for administering experiments with user input-contingent trial progression and data presentation

University of Minnesota, Biomedical Engineering Department — Minneapolis, MN
Neuromodulation Research and Technology Laboratory — Summer 2013
Advisor: Matthew Johnson (Neural Engineering)

NIH funded project: *"Simulating Deep Brain Stimulation"*

- Simulated deep brain stimulation of a sub-cortical structure of the brain linked to Parkinson's disease with a library developed in Python that interfaced with simulation environment NEURON
- Developed framework for future python-NEURON interfacing

Additional Research Experience

National Central University, Mechanical Engineering Department (Shenqyang Shy) — Jhongli City, Taiwan
Turbulent Combustion Laboratory — Summer 2012

project: *"Testing Theories in Fluid Dynamics"*

- Explored boundary layer conditions, and laminar and turbulent flow of fluids through pipes of varying cross-sections

Poster Presentations

- *"Variational Adversarial Deep Domain Adaptation for Healthcare Time Series",* Southern California Machine Learning Symposium, California Institute of Technology, Pasadena, CA, November 2016, **runner-up, best poster**
- *"Modeling a DIRC Particle Detector for High-Multiplicity Collisions",* 23rd Annual CSTEP Statewide Student Conference, Bolton Landing, NY, April 2015, **2nd place, physics and math**
- *"Modeling the Influence of Situational Variation on Theory of Mind"*, Summer Seminar Day, California Institute of Technology, Pasadena, CA, August 2014
- *"Transitioning from Hoc to Python as the Tool for Computational Modeling of Neurons, Networks, and Deep Brain Stimulation",* 22nd Annual CSTEP Statewide Student Conference, Bolton Landing, NY, April 2014
- *"Modeling a Detection of internally reflected Cherenkov light (DIRC) Particle Detector for High-Multiplicity Collisions",* URECA Celebration of Undergraduate Research & Creativity, Stony Brook University, Stony Brook, NY, April 2014
- *"Transitioning from Hoc to Python as the Tool for Computational Modeling of Neurons, Networks, and Deep Brain Stimulation"*, Poster Symposium, University of Minnesota, Minneapolis, MN, August 2013

Panels

- *Research and Fellowships Week NSF Panel*, Los Angeles, CA, November 2016
- *National Society of Black Engineers Grad Panel*, Los Angeles, CA, October 2016
- *Graduate School External Fellowship Boot Camp*, Los Angeles, CA, August 2016
- *Engineering Graduate Diversity Symposium*, Los Angeles, CA, October 2015
- *Black Student Association: What it Takes to go to Graduate School*, Los Angeles, CA, October 2015
- *Collegiate Science and Technology Entry Program Undergraduate Research Panel*, Stony Brook, NY, October 2014

Professional Affiliation

- Society of Physics

Programming Experience

- Python, C++, Java, MATLAB, JavaScript, PHP, Fortran95, Hoc, and shell script

Software Experience

- Theano, Tensorflow, Keras, Latex, ROOT, NEURON