

# Wilka Torrico De Carvalho

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## Education

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- Masters of Science in Computer Science 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

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- NSF Graduate Research Fellowship Apr. 2015
- SBU Provost Award for Academic Excellence (20 students chosen from graduating class of 3700) Apr. 2015
- 2<sup>nd</sup> Place in Physics and Mathematics at 23<sup>rd</sup> Annual CSTEP Statewide Student Conference Apr. 2015
- SBU Researcher of the Month Dec. 2014
- Howard Hughes Medical Institute Minority Undergraduate Research Fellowship Jun. 2014
- Life Sciences Summer Undergraduate Research Program Fellowship Jun. 2013
- Sigma Pi Sigma Physics Honor Society (only 2<sup>nd</sup> year student inducted) Mar. 2013
- SBU Scholar of Science, Technology, Engineering and Math Sep. 2012
- Louis Stokes Alliance for Minority Participation NSF Scholar Sep. 2011
- Dean's List

## Computational Research Experience

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University of Southern California, Computer Science Department (Yan Liu) Los Angeles, NY  
*Machine Learning Group* Spring 2016 –

Stony Brook University, Physics Department (Axel Drees) Stony Brook, NY  
*Heavy Ion Research Group* Spring 2013 – Summer 2015  
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 (Giancarlo La Camera) Stony Brook, NY  
*NSF LSAMP Scholar in Computational Neuroscience Group* Fall 2014

- Performed spectral analyses of neural data using MATLAB
- Used temporal patterns to determine behavioral correlates of neural activity

Caltech, Computations and Neural Systems Department (Ralph Adolphs) Pasadena, CA  
Howard Hughes Medical Institute MURF Fellow in Emotion and Social Cognition Laboratory Summer 2014  
HHMI funded project: *“Modeling the Influence of Situational Variation on Theory of Mind”*  
• Developed an experimental paradigm to study the role of *attribution on theory of mind*  
• Wrote a web platform for administering experiments with user input-contingent trial progression and data presentation

University of Minnesota, Biomedical Engineering Department (Matthew Johnson) Minneapolis, MN  
Neuromodulation Research and Technology Laboratory Summer 2013  
NIH funded project: *“Transitioning from Hoc to Python as the Tool for Computational Modeling of Neurons, Networks, and 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

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National Central University, Mechanical Engineering Department (Shenqyang Shy) Jhongli City, Taiwan  
Turbulent Combustion Laboratory Summer 2012  
NSF funded project: *“Testing Theories in Fluid Dynamics”*  
• Explored boundary layer conditions, and laminar and turbulent flow of fluids through pipes of varying cross-sections

## Presentations

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- *“Modeling a DIRC Particle Detector for High-Multiplicity Collisions”*, 23<sup>rd</sup> Annual CSTEP Statewide Student Conference, Bolton Landing, NY, April 2015
- *“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”*, 22<sup>nd</sup> 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

## Professional Affiliation

- Society of Physics

## Programming Experience

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

## Software Experience

- Latex, ROOT, NEURON, Git