Resume

Eric J. Leonardis, PhD

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SKILLS

Programming Languages: Matlab, Python, Julia, C, Arduino, Processing

Packages: GitHub/GitLab, Pytorch, Jupyter Notebooks, Tensorflow, OpenCV, Scikit-Learn, Numpy, Pandas, MS Office

Machine Learning: Reinforcement Learning, Classification (SVM, LDA, Neural Networks), PCA, Regression, Random Forests

Predictive Modeling: Causal Inference, MDP, POMDP, Bayesian Modeling

Signal Processing: Fourier Transform, Hilbert Transform, Feature Extraction, Bandpass Filtering, Data Cleaning

Complex Systems: Phase-Space Reconstruction, Recurrence Quantification Analysis, Topological Data Analysis

Hardware: Arduino, Raspberry Pi, Neuralynx Neural Implants, Electronic Circuit Construction, Servo Motors, IR sensors, Kinect

Languages: English – (Native Speaker), Mandarin Chinese – (Limited Working Proficiency in Reading, Writing, and Speaking)

EDUCATION

Ph.D. in Cognitive Science
Master of Science (MS) in Cognitive Science
University of California, San Diego (UCSD)
September 2014 – June 2022
GPA: 3.967

Bachelor of Arts (BA);
Majors: Psychology, History, and Chinese Studies
Hofstra University
September 2010 – May 2014
GPA: 3.87

EXPERIENCE

Graduate Researcher – Andrea Chiba Lab – August 2015 – Present
Worked with Professor Andrea Chiba and Dr. Laleh Quinn on an interactive robotics paradigm where rodents learn how to interact with robots. I have managed multiple groups of students, research scientists, post-docs, and electrical/mechanical/control engineers to acquire behavioral/neural data then analyze that data using statistics, probabilistic modeling, dynamical systems analysis and machine learning techniques.

Visiting Scholar – Complex and Intelligent Systems Lab – UQ School of IT & EE, Brisbane, AU – March 2016**,** November 2017
Worked with Professor Janet Wiles and her engineering team at the University of Queensland to create novel methods for dynamical systems analysis.

Instructor – UCSD – Intro to Cognitive Science, Hands-On Computing, & Cyborgs– Summer 2015 – Summer 2022
I acted as the instructor for an undergraduate course COGS 100: Cyborgs Now and In The Future and COGS 8: Hands-On Computing where I taught foundations in computational cognitive science and human-computer interaction design. I also taught a high school introduction to cognitive science class for seven consecutive summers with the Academic Connections program at UCSD, where I taught students psychology, neuroscience, AI and machine learning.

PROJECTS

"Discovering Patterns in Human-Robot Interaction: New Tools for Complex Adaptive Social Systems"
US Air Force Office of Scientific Research – AU Defense Science and Technology Group Grant Awarded
Best Paper Award, 1st Annual Review and Workshop AFOSR – DSTG Co-Sponsored Research Program on Trusted Autonomy
In collaboration with UQ, the US Air Force Research Lab and the Australian Department of Defense's Defense Science and Technology Group, we have produced novel tools in Matlab for convergent cross-mapping, recurrence quantification analysis, and topological data analysis.

***"*PiRat: An Autonomous Framework for Studying Social Behavior in Rats and Robots."**
2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2018), Madrid, Spain
Our international research team has created a motion tracking system using Kinect2 for tracking rats and robots as they interact with each other. Our team has also developed a GUI in Python for visualizing the tracking information and controlling the robot autonomously. The purpose of the system is to act as an experimental apparatus to examine whether rats perceive autonomous robots as animate creatures.

TECHNICAL DEMONSTRATIONS

"OpenBCI DIY Educational Platform: Build Your Own Mind Controlled Robot"
Equity Journey: Investing in the Whole Learner. Grantmakers for Education Conference. Coronado*,* CA
Sponsored by the Chan Zuckerberg Initiative, Gates Foundation, Deutsche Bank, and multiple venture capital firms.

"Brain-controlled devices and the internet of things"
IBM Artificial Intelligence for Healthy Living Center (AIHL) SmartHome Demonstration at Calit2, UCSD, La Jolla, CA.

RELEVANT COURSEWORK

Probabilistic Modeling, Data Analysis in Matlab, Introduction to The Physics of Complex Systems, Applied Complexity, Computational Modeling of Cognition, Multisensory Processing, Applied Linear Algebra, Computational Neurobiology