RUSSELL JARVIS

PhD Neuroscience, MA Biomedical Eng

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SUMMARY

I am a data and modelling focused neuroscientist and biomedical engineer with a machine learning and Free and Open Source skillset. I recently completed a PhD in Neuroscience from Arizona State University, where I focused on gradient-free data-driven optimization of spiking neuronal models. Currently, I am using fast machine learning with tools like Julia+Flux. I thrive on social coding, and I often read about how to better foster team synergy and how to make the most of professional relationships.

EXPERIENCE

Freelance Software Consultancy

Self Managed Software Consultancy

2021-June Online

- Software consultancy I made interactive visualisations of odor2action academic social network data using python tools streamlit plotly and holoviews.

Research Assistant

Arizona State University

July 2016-2020 Phoenix, AZ

Research Assistant, , Tempe, USA

- In this role, I developed a parallel genetic algorithm interface to the research software NeuronUnit. I also developed, and continue to maintain, a simulator backend for NeuroUnit (jithub).

Research Internship

IBM Research

2016 Melbourne, Vic, Australia

- I performed scientific programming, simulation, and parallel model optimization. Specifically,
- I developed a genetic algorithm to find unknown neural conductance values using NEURON+Python in single compartment neuronal models.

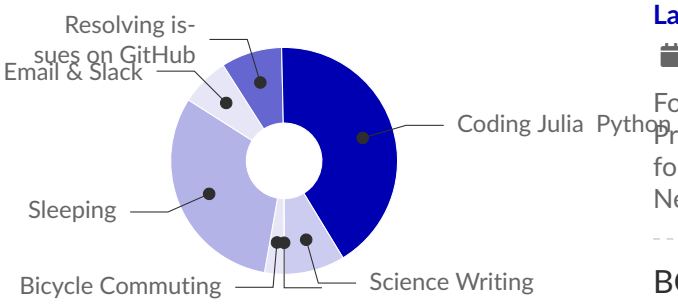
Research Internship

Okinawa Institute of Science and Technology

2015 Okinawa Japan

- For this project, I developed software for neuron model description language NineML. I designed and implemented a Kinetics extension for NineML. I also ported scripts for automated parameter fitting of neuronal models to run on a new HPC cluster at OIST.

A DAY OF MY LIFE



MOST PROUD OF

Teaching myself Julia
I have mostly converted my PhD dissertation project from Python to Julia-language.

Converting Closed Science to Open Science
I Converted a MATLAB project to a Open Source Python Data driven dashboard, I hosted the project online and taught previous MATLAB developers how to use GitHub, I then helped them write documentation and a pre-publication document on the Open Science Platform.

Typesetting with Code
Typsetting this CV in LaTeXand other documents in RMarkdown.

SKILLS

HPC GitHub Julia Julia: Metaheuristics Python: Neo Python: Numba Python: Dask Linux LaTeX

Growth Mindset Empathy Collaboration

EDUCATION

PhD Neuroscience (computational)

Arizona State University

Sept 2019 – June 2021

Neuroinformatics and Computational Neuroscience Title: Towards Neuronal Deep Fakes: Data Driven Optimization of Reduced Neuronal Models

MA of Biomedical Engineering

La Trobe University

Sept 1993 – June 1997

Focus: Embedded Programming, Scientific Programming, Model Simulation. Thesis: Information Flow in a Digitally Reconstructed Neural Network

BCH of Electronic Engineering

PRE-PUBLICATION

- Jarvis, R. J., McGurrin, P. M., Featherston, R., Madsen, M. S., Bansal, S., & Lusk, B. (2021). Interactive exploration of the readability of science authors. doi:10.31219/osf.io/xuzdr
- Gerkin, R. C., Birgiolas, J., Jarvis, R. J., Omar, C., & Crook, S. M. (2019). Neuronunit: A package for data-driven validation of neuron models using sciunit. *bioRxiv*. doi:10.1101/665331. eprint: https://www.biorxiv.org/content/early/2019/06/09/665331.full.pdf

PEER REVIEWED PUBLICATION

- Jarvis, R. J., McGurrin, P. M., Featherston, R., Madsen, M. S., Bansal, S., & Lusk, B. (2021). Interactive exploration of the readability of science authors. doi:10.31219/osf.io/xuzdr

CONFERENCE ABSTRACTS

- Jarvis, R. J., Gerkin, R. C., Crook, S. M. (2017). Parallel model optimization against experimental neuron physiology data with DEAP and NeuronUnit. Frontiers in Neuroinformatics Conference Abstract: 10th INCF Congress of Neuroinformatics.
- Gerkin, R. C., Jarvis, R. J., Crook, S. M. (2018) Multiscale model validation with SciUnit. BMC Neuroscience.
- Birgiolas, J., Haynes, V., Jarvis, R.J., Gerkin, R., Crook, S.M. (2019), NeuroML-DB: A model sharing resource that promotes rapid selection and reuse. International Neuroinformatics Coordinating Facility Congress

PRESENTATIONS

- Jarvis, R.J., A better file format for representing neuron morphology, 2015, Okinawa Institute of Science and Technology Seminar, Okinawa, Japan
- Jarvis, R., Crook, S.M., Gerkin, R.C., Parallel Model Optimization against Experimental Data with NeuronUnit, 2017 INCF Neuroinformatics Congress, Kuala Lumpur, Malaysia
- Jarvis, R., Crook, S.M., Gerkin, R.C., Model validation and optimization, Mathematical Biology Seminar, School of Mathematical and Statistical Sciences, Arizona State University, 2018.

La Trobe University

Sept 1997 – June 1999

Focus: Analog electronics, Digital Electronics, Embedded Programming, Circuit Simulation Thesis: A CA1 Hippocampal Micro Circuit

OTHER TRAINING

Certificate Training Course

Julia Academy

2021–Ongoing Online

Flux: Machine learning.

Research Bazaar

University of Melbourne

2015 Melbourne, VIC, Australia

Intensive Workshop Data Visualization

Two Unit Enrolment

University of Melbourne

2012 Melbourne, VIC, Australia

"Neuro Imaging Methods","Neurons from APs to Learning"

Erasmus Student Exchange Program

Linkoping University

2011 Sweden

Medical Imaging Informatics and Data Compression

Three Unit Enrolment

La Trobe University

2009 Melbourne, VIC, Australia

"Linguistics","Philosphical Logic","Critical Thinking"

TEACHING

Laboratory Instructor

2012

La Trobe University Melbourne, VIC, Australia

Unit: Neuro Engineering Australia In this role I assisted students with programming and quantitative neuron physiology problems using the NEURON simulator.

VOLUNTEER WORK

Science Outreach: Night of the Open Door

2019

Phoenix, Arizona

I wrote code to visualize 3D neuron cell shape and structure in virtual reality, and then displayed these virtual shapes to school kids and young adolescence. My lab was a theoretical/computational lab having a virtual reality product to show people greatly assisted with our labs capacity to communicate abstract knowledge.

Tutor Chess Ideas

2010

Ripponlea, Melbourne, Australia

Volunteering at chess ideas involved teaching chess to children.

Friends of the Earth

2001-2004

Collingwood, Melbourne, Australia

Cooperative Cafe At friends of the Earth Bookstore and Cafe Smith st Collingwood. Responsibilities: food preparation, managing stock for bulk food, and customer service.

Willing Workers On Organic Farms

2000–2005

Rural Victoria, Australia

Applying permaculture principles to create long term food gardens on a small to medium scale.

REFEREES

Prof. Rick Gerkin

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Paul Junor Senior Lecturer

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