Joel G. Yancey

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CORE COMPETENCIES **scientific programming, system administration, Linux, shell scripting, OOP, Qt (GUI), UX, C++, Python, R, MATLAB, git, CI/CD, ML, HPC, computational neurobiology, bioinformatics algorithms, RNA-seq, GWAS, HTML, CSS, SQL, Django, JavaScript, TypeScript**

CERTIFICATIONS **UNIX & Linux System Administration** UCSD Extension — San Diego, CA 11/2020

EDUCATION **Neuroscience, Bachelor of Science** UCLA — Los Angeles, CA 09/2017
Bioinformatics Minor UCLA School of Engineering and Applied Science

WORK EXPERIENCE

Web Developer
Self-employed
San Diego, CA
12/2023 – present

- Developed custom websites using JavaScript and Python-based web development frameworks; React, Django, CSS, HTML
- Designed backend web apps employing cloud-based HPC frameworks via AWS Developer Tools

Scientific Programmer I (Sejnowski Lab)
Computational Neurobiology Laboratory @ Salk Institute for Biological Studies
San Diego, CA
11/2022 – 12/2023

- Developed and maintained AlignEM-SWiFT, a popular open-source, cross-platform Qt/GUI application for EM image registration (or "alignment"). Deployed the application for high-volume scientific use on the high performance computer (HPC) Lonestar6 at the Texas Advanced Computing Center (TACC). It has been cited in published and ongoing research.
- Developed a Python wrapper (API) for a suite of C++ image registration/image processing programs (SWIFT)
- Designed deployment strategies for compiled and interpreted software applications to run with multiprocessing on HPC
- Debugged, tracked issues, and implemented feature requests for a C++ molecular kinetics simulation software (MCell4)

Jr. Systems Administrator (Sejnowski Lab)
Computational Neurobiology Laboratory @ Salk Institute for Biological Studies
San Diego, CA
10/2019 – 11/2022

- Maintained essential IT infrastructure used in computational neurobiology research, including operating systems, security tools, applications, servers, email systems, laptops, desktops, software, and hardware
- Installed, configured, maintained, upgraded workstations and experiment rigs running Linux or Windows
- Wrote bash scripts, created custom software images, and security tested Debian-based computing machines
- Configured virtual machines for security testing, system monitoring, and performance testing
- Assembled compute workstations to specifications of Salk Institute researchers and staff in the computational laboratories

Research Assistant I/Lab Manager (Xu & Huang Lab)
Sanford Burnham Prebys Medical Discovery Institute
San Diego, CA
07/2018 – 10/2019

- Developed a novel phagocytosis quantification assay used in published research (Journal of Experimental Medicine).
- Wrote Python scripts and Excel VBA macros for analysis of genetic and other bioinformatics data.
- Analyzed batches of Next-Gen Sequencing (NGS) data, such as RNA-seq data to investigate differential gene expression
- Managerial responsibilities included purchasing, training coworkers in the use of scientific instruments, acquisition and installation of laboratory equipment, primary contact for all oversight compliance, i.e. AAALAC and OSHA

Laboratory Assistant
Microscopic Tech & Electron Microscopy Core @ UCLA Brain Research Institute
Los Angeles, CA
06/2014 – 09/2014

- Developed film and facilitated access to UCLA's common equipment JEOL 100CX transmission electron microscope.
- Performed histology including cryosectioning, mounting, and staining of brain and other tissues

Student Researcher (Buonomano Lab) Los Angeles, CA
UCLA Student Research Program; Volunteer 07/2012 – 07/2015

- Developed a graphical user interface (GUI) in MATLAB for conducting a novel experiment according to protocol
- Used machine learning algorithms (SVM) to decode neural population responses. Developed MATLAB scripts for publication-quality figures i.e. rasters, PSTHs, and neural activity plots.
- Led a 3-year in vivo electrophysiology experiment investigating how the brain encodes spatiotemporal events

PUBLICATIONS

MCell4 with BioNetGen: A Monte Carlo Simulator of Rule-Based Reaction-Diffusion Systems with Python Interface PLOS Computational Biology 04/2024
Adam Husar, Mariam Ordyan, Guadalupe Garcia, Joel Yancey,..., Thomas Bartol, Terrence Sejnowski.
Contribution: Conceptualization, Methodology, Software, Validation, Visualization, Writing
DOI : https://dx.plos.org/10.1371/journal.pcbi.1011800

Multiomic landscape and functional analysis of Alzheimer's disease-associated gene variants in human ESC-derived microglia Journal of Experimental Medicine 12/2020
Liu T., Zhu B., Liu Y., Zhang X., Yin J., Li X., Hodges A., Zhou L., Yancey J.,...,Huang T., Tanzi R., Xu H.
Contribution: data curation, formal analysis, software
DOI : https://doi.org/10.1084/jem.20200474

Role of Rab GTPases in Alzheimer's Disease ACS Chemical Neuroscience 02/2019
Zhang X., Huang T., Yancey J., Luo H., and Zhang Y.
Contribution: writing, editing
DOI : https://doi.org/10.1021/acschemneuro.8b00387

POSTER PRESENTATIONS & SOFTWARE DEMONSTRATIONS

AlignEM-SWiFT: Open-source Software for Aligning Electron Micrographs using Signal Whitening Fourier Transforms San Diego, CA 2022
Society for Neuroscience 2022
Source code/PDF: github.com/mcellteam/swift-ir/tree/joel_develop / mcell.org/sfn22_poster.pdf
Demos: youtube.com/playlist?list=PLmDQKF70E5LzYo7MG2nAJcTQiKaXI-Ldy

AlignEM-SWiFT: Graphical Interface for Aligning Electron Micrographs using Signal Whitening Fourier Transforms Austin, TX 2022
2022 TACCSTER Symposium @ Texas Advanced Computing Center

Decoding Stimulus Features From Cortical Population Responses Los Angeles, CA 2015
2015 UCLA Neuroscience Undergraduate Poster Fair
PDF / source: github.com/joelyancey/SRP199-Poster-UCLA

Neuroscience Model Builder C++/Qt tool for diagraming neural circuits. Source code can be downloaded from GitHub and compiled. Tested on Debian GNU/Linux 10 and macOS 14.5 Los Angeles, CA 2014
Source / Demo: github.com/joelyancey/finalProject_neuralNetwork / youtu.be/AZcQfiHGj8g

COMPUTER SCIENCE COURSEWORK

C++	Advanced Programming (PIC 10C, UCLA) Intermediate Programming (PIC 10B, UCLA) Introduction to Programming (PIC 10A, UCLA)
UNIX & Shell	Shell Programming (CSE-40079, UCSD Ext) UNIX & Linux Security (CSE-41272, UCSD Ext) UNIX & Linux Sys Admin. I (CSE-41269, UCSD Ext) UNIX & Linux Sys Admin. II (CSE-41270, UCSD Ext)
Python	Algorithms in Bioinformatics (CS CM 122, UCLA) Computational Genetics (CS CM 124, UCLA) Computational and Systems Biology (CS M184, UCLA)
R	Probability Theory (STATS 100A, UCLA) Statistical Methods for Life Sciences (STATS 13, UCLA)
Discrete Math	Design & Analysis of Algorithms (CSE 101, UCSD) Linear Algebra and Applications (MATH 33A, UCLA) Intro to Discrete Structures (MATH 61, UCLA)