Addison Richards
adsrichards@outlook.com
Github link
LinkedIn link

Highlights

Excellent understanding of scientific computing and mathematics for simulation and data analysis.
Experienced with Python programming utilizing packages such as NumPy and Pandas for analysis of large datasets.
Experienced with C++ and object-oriented software development for published research projects.

Experience

Research Assistant – University of Waterloo (Gingras group) 9/19 – 1/20 (4 Months)

- Developed Markov-chain Monte Carlo (MCMC) programs in C++ which were run in parallel using high-performance computing (HPC) clusters to simulate electromagnetics models.
- Developed Python scripts for statistical analysis of large datasets generated by MCMC simulations.

Research Assistant – University of Waterloo (Edginton group) 5/19 – 9/19 (4 Months)

- Developed Matlab scripts to simulate particle deposition and clearance in lung pathways.

Research Assistant – University of Waterloo (Ingalls group) 1/19 – 5/19 (4 Months)

- Developed MCMC programs and Matlab scripts to simulate a stochastic gene expression model.
- Implemented mathematical optimization algorithms such as multiple shooting and simulated annealing.
- Contributed to a conference publication by implementing the Gillespie algorithm and generating data. (link)

Research Assistant – Okinawa Institute of Science and Technology (Shannon group) 5/18 – 9/18 (4 Months)

- Developed MCMC parallel programs in C++ to simulate statistical physics models on a HPC cluster.

Research Assistant – University of Waterloo (Gingras group) 9/17 – 1/18 (4 Months)

- Developed MCMC parallel programs in C++ to simulate electromagnetics models on HPC clusters.
- Contributed to a publication by L. Bovo et. al. by providing MCMC simulation data. (link)

Skills

C++, Python, Matlab, MPI, Bash, data analysis, simulation, functional programming, lin. alg., diff. eqns., research.

Education

University of Waterloo, BSc Mathematical Physics, May 2020.
Courses in advanced mathematics and physics, computer science, statistics, and scientific computing.

Publications

N. Braniff, A. Richards, B. P. Ingalls, IFAC-PapersOnLine **52**, 255 (2019).
L. Bovo, et. al., Nature Communications **9**, 1999 (2018) (Acknowledged for providing MCMC simulation data).

Awards

2 × NSERC Undergraduate Student Research Award (Sept 2017 – Jan 2018) & (Jan 2019 – May 2019).

Personal Projects

adsrichards.com