

Aidan Lakshman

ahl27@pitt.edu • ahl27.com • 1 (724) 612 9940

EDUCATION

University of Pittsburgh, School of Medicine

Doctoral Candidate, Biomedical Informatics

2020 – 2025

(expected)

- Advisor: Dr. Erik Wright
- Dissertation: Comparative Genomic Methods to Reveal Functional Associations Among Proteins
- Funded by National Library of Medicine T-15 Training Grant

University of Central Florida

Bachelor of Science, Mathematics, magna cum laude

2016 – 2020

- Burnett Honors College
- National Merit Scholar

Nagasaki University of Foreign Studies

USAC Study Abroad, Japanese Language and Culture

Summer 2019

PUBLICATIONS

Lakshman, A. & Wright, E.S. (2024). “EvoWeaver: Large-scale prediction of gene functional associations from coevolutionary signals” (**Under Revision**). *Nature Biotechnology*. [Preprint available on request]

Cooley, N., Lakshman, A., & Wright, E.S. (2023). “SynExtend: Tools for Working With Synteny Objects”. doi:10.18129/B9.bioc.SynExtend, R package version 1.14.0, <https://bioconductor.org/packages/SynExtend>.

CONFERENCE PRESENTATIONS

useR! 2024

Community Detection for Extremely Large Networks

July 8-11, 2024

Salzburg, Austria

Great Lakes Bioinformatics Conference

Scalable Community Detection for Large Networks

- Organizer and co-chair for special session “Scalable Analysis for Big Biological Data”

May 13-16, 2024

Pittsburgh, PA

RECOMB 2024

EvoWeaver: Large-scale prediction of gene functional associations from coevolutionary signals

- Poster Presentation

Apr. 29 - May 2, 2024

Cambridge, MA

R Project Sprint 2023*

- Refactored R’s **dendrapply** function

Aug. 30 - Sept. 1, 2023

Coventry, UK

Evolution 2023*

Protein Function from Coevolutionary Signal

June 21-26, 2023

Albuquerque, NM

Bioconductor 2022*

Using comparative genomics to predict protein coevolution networks

- Led a two hour workshop (materials available at ahl27.com/tutorials)

July 27-29, 2022

Seattle, WA

NSF Sponsored Workshop*

Detecting adaptive evolutionary events in genomes of polar species

July 25-26, 2022

St. Augustine, FL

Evolution 2022

Protein Functional Inference using Coevolutionary Signal

June 24-28, 2022

Cleveland, OH

NLM Informatics Training Conference 2022

Ensemble Methods Improve de novo Prediction of Protein Functional Association Networks

June 22-24, 2022

Buffalo, NY

*Awarded merit-based travel funding

TEACHING & ADVISING

Undergraduate Mentor

Advisor

Fall 2022

- Mentored undergraduate students for a semester-long research internship program
- Designed an individualized curriculum to teach R programming for Bioinformatics

	UPMC DDCF-UI Program <i>Advisor</i> <ul style="list-style-type: none"> ▪ Mentored undergraduate students for a summer-long research internship program ▪ Designed summer research projects for mentees ▪ Gave lectures to intern cohort 	Summer 2022
	R Programming for Scientific Research , Univ. Pittsburgh <i>Teaching Assistant</i> <ul style="list-style-type: none"> ▪ Graduate level course in R programming ▪ Gave lectures, graded assignments, and wrote quizzes 	Fall 2021
	Artificial Intelligence Club , Univ. Central Florida <i>Director</i> <ul style="list-style-type: none"> ▪ Gave regular lectures on machine learning to classes of >30 undergraduates ▪ Led several journal clubs for undergraduate students ▪ Coordinated sponsorship opportunities and guest speakers 	2018 – 2020
OTHER FUNDED RESEARCH	Critical Updates to Biostrings <i>R Consortium</i> <ul style="list-style-type: none"> ▪ Funding Agency: R Infrastructure Steering Committee ▪ Principal Investigators: Aidan Lakshman ▪ Contributed Work: Subsumed position as maintainer of the Biostrings R package. Implemented key enhancements to Biostrings to support modern genomics analyses. ▪ Total Award: \$8,000 	2024 – 2025
	Robotics Institute Summer Scholar , Carnegie Mellon University <i>Intelligent Coordination and Logistics Lab</i> <ul style="list-style-type: none"> ▪ Funding Agency: National Science Foundation ▪ Principal Investigators: Dr. Stephen Smith and Dr. Isaac Isukapati ▪ Contributed Work: used Bayesian hierarchical modelling to predict bus dwell times for traffic signal control optimization, and used cellular and DSRC GPS readings to improve positioning in an intersection for use in an app for mobility impaired pedestrians. ▪ Total Award: \$5,250 	Summer 2018
	Burnett Research Scholars Grant <ul style="list-style-type: none"> ▪ Funding Agency: UCF Burnett Honors College ▪ Principal Investigators: Aidan Lakshman, Dr. Annie Wu (Advisor) ▪ Project Title: Improving efficiency of embodied evolutionary robotic systems within the context of multi-foraging problems by incentivizing exploration behavior. ▪ Total Award: \$3,000 	2018 – 2019
WORK EXPERIENCE	Amazon Web Services , Herndon, VA [Virtual] <i>Software Development Engineer Intern</i> <ul style="list-style-type: none"> ▪ Led a team to implement a robust testing framework for Service Workbench on AWS, an open source AWS product to help researchers easily provision cloud resources. ▪ Redesigned how AWS accounts are handled by implementing new UI components, writing API calls, and implementing backend server request handling ▪ Designed UI components using React, backend components with Node.js, and additional processes with AWS Lambda 	Summer 2020 & 2021
	Software Engineering Institute, CERT Division , Carnegie Mellon University <i>Data Science / Software Engineering Intern</i> <ul style="list-style-type: none"> ▪ Developed a Python application utilizing Apache Spark to use Latent Dirichlet Allocation to identify trends in malware data. ▪ Developed a Python program to simulate web traffic and user activity for cyberdefense training environments. 	Summer 2017
SKILLS		
	High Performance Computing <ul style="list-style-type: none"> ▪ Experience implementing genomics algorithms on distributed systems ▪ Over 3.5 million compute hours on HTCondor systems ▪ Passed AWS Cloud Practitioner Certification Exam 	

R Programming

- High level of proficiency, particularly in comparative phylogenomics
- Contributed code to the R programming language
- Author of the SynExtend and froth R packages
- Contributor to the Biostrings R package
- Implemented neural networks, random forests, and support vector machines from scratch in C and Fortran (with R interfaces)

C Programming

- Extensive experience writing C extensions for R
- Moderate experience writing C programs for other applications

Fortran

- Proficiency writing Fortran extensions for R
- Implemented Random Forests from scratch using Fortran and C

Other Programming Languages

- Professional experience developing with JavaScript, Python, Bash, and PowerShell
- Proficiency with C#, Java, and Haskell

Foreign Languages

- Conversational proficiency in Japanese and German

Computer Engineering

- Designed and built a cloud storage system with multiple layers of data redundancy
 - Built a computer from scratch on a breadboard with a 6502 microprocessor
 - Wrote a 6502 emulator in C
 - Wrote a Forth interpreter and OS from scratch in Assembly for the 6502
-