Dylan Lyon

Mobile: +1 (954) 806-3848
Email: dylanscottlyon@gmail.com
Web: dylanlyon.netlify.com

Computational physicist at Los Alamos National Lab.

Education

M.S. Mechanical Engineering @ University of Michigan, Ann Arbor	**Class of 2023**
B.S. Aerospace Engineering @ University of Central Florida	**Class of 2022**

Skills & Relevant Coursework

Programming
− Fluent in Java, Python, FORTRAN, C/C++ with OpenMPI & Kokkos, Octave/MATLAB, Julia
− Completed Computer Science I, Modeling Methods, High-Performance Computing
− Proficient in Linux/Unix and Windows, working with CMake and Bash scripting

Mathematics and Control Theory
− Completed Partial Differential Equations, Controls, Linear Systems Theory, Linear Optimization

Aerospace & Mechanical Engineering
− Graduate-Level Math Modeling, Fluid Mechanics, Heat Transfer, Dynamics
− Doctoral-Level Finite Element Analysis, Turbines for Sustainable Power Generation
− Experienced with Solidworks Flow Simulation, ANSYS, Siemens StarCCM+, COMSOL

Experience

_Job Computational Physicist @ Los Alamos National Laboratory______**2023-Pres.**

Software developer for hydrodynamics code **xRAGE**. Using Kokkos for hardware-agnostic parallelization on both CPU and CPU/GPU computer clusters. Working specifically on improvements to heat conduction in high energy density plasmas for nuclear fusion applications.

Skills:
● Kokkos implementation of GPU parallelism
● Fortran & C++ interoperable programming

_Research Digit Project, Robust Control Engineer @ U-M ROAHM Lab______**2022-2023**

Producing a custom controller for Digit, a bipedal robot intended for last mile package delivery. A joint venture of U-M, Ford Motor Company, Amazon, and Agility Robotics. Worked on system identification of unmodeled dynamics on the robot. Uses regression analysis on the kinematic tree model of the robot. Worked closely with 2 Ph.D. students on a shared git repository.

Skills:
● C++ | Matlab | Spatial-v2 kinematics

_Project Lead NASA MINDS 1st Place Senior Grand Champion Design______**2021-2022**

tinyurl.com/SenseAidSlides   tinyurl.com/SenseAidPaper

Team of 7 working on innovative design in space systems. Prototyped a 3D printer capable of printing functional engineering materials beyond thermoplastics. Two semester project tackling novel printing methods, microgravity conditions, multi-ink prints, and planning a path to Artemis Program incorporation. 1st place nationwide.

Skills:
● Large-project planning and execution
● Research and development in an underexplored field
● Solidworks modeling and manufacturing for novel parts
● Technical writing and presentation for large audiences (1st Place - Senior Research Poster)

***Thesis* 'A Finite Difference Model For Induced Hypothermia During Shock'**_____**2019-2021**

Completed an undergraduate thesis on a finite difference model for thermoregulation under two extreme states of blood loss and hypothermia. Induced hypothermia in the brain is being researched as a way to prolong a circulatory shock patient's oxygen saturation by reducing their metabolic activity. This model serves as a low-node, quick-to-compute alternative to body-wide FEM modeling when the only region of interest is the brain. The FDM model can be applied to simulate methods of cooling for induced hypothermia and was validated against a cooling helmet and a saline injection. The operation has applicability in military and urban ambulance use, though future modifications are extending the model's domain to infants and amputees.

Skills:
- 60+ pages of professional writing
- Modeling of highly non-linear heat transfer equations
- Documented, project-scale programming

***Job* Lab Instructor**_____**2019-2022**

Lab instructor for Modeling Methods in Mechanical and Aerospace Engineering. Lectured on the theory, implementation, and practical usage of computing algorithms to UCF's class of engineering undergraduates. Each weekly lab involves a 20+ minute lecture, a live-coding portion, and room for bug-fixing students' code. The lab instructors also host 75 minute exam reviews with live example problems. The lab covers topics such as root finders, matrix solvers, and numerical solvers for differential equations.

Skills:
- Wealth of experience in Octave, MATLAB, and MathCAD programming
- Deep theory and application knowledge of numerical methods
- Public speaking in an educational role

***Member* UCF Varsity Programming Team**_____**2018-2020**

Competing member of UCF's competitive programming team. Weekly Saturday practices include 2 hours of lecture followed by a 5-hour team practice tournament and a brief solution review. Contest questions cover high-level problems in graph theory, numerical geometry, and algorithms like FFT or data structures like segment trees. Also hosted and wrote problems for UCF's own high school tournament and summer academy.

Skills:
- Dearth of knowledge on high-level computing algorithms and structs
- Capable of lecturing on new algorithms to laypeople and programmers alike

Project: *LCMM Design-Dimension Solid Simulation*, a Matlab program for generative geometry_____**2022**
Project: *Optimization of Cable-Stayed Skyscrapers*, an iteratively generated FEM simulation in Octave+Julia_____**2022**
Project: *Simulated Annealing*, an iterative solution for the Traveling Salesman Problem_____**2019**
Project: *Automatic boat*, programmed the microcontroller for a GPS-based guidance system_____**2019**
Project: *Barnes-Hut Gravity Simulator*, an O[nlog(n)] segtree-based particle-in-cell code_____**2017-2019**

Awards

1st Prize Senior Team, NASA MINDS Design Contest	**2022**
UCF Honors In The Major - Aerospace	**2021**
170 Verbal & 170 Quant on the GRE	**2021**
Allyn M. Stearman Research Scholarship	**2022**
National Merit Scholar Finalist	**2018**
1st Prize UCF Integration Bee	**2019**
1st Prize JV Mercer Spring Programming Competition	**2019**
7th Prize UCF Programming Team Tryouts	**2019**