(720)466-0120 allison.liu@colorado.edu

Allison Liu

Resilient, curious, and motivated student seeking to provide programming and analysis experience to scientific and industrial applications.

EDUCATION

University of Colorado, Boulder, CO
Applied Math B.S., Computer Science Minor, Expected Graduation May 2022

- **GPA: 3.706/4.000**
- Relevant Coursework: Computer Science- Data Structures, **Algorithms**, **Artificial Intelligence**. Math- Multivariable Calculus, Linear Algebra, **Probability, Numerical Analysis, Fourier Analysis**. Spring 2021 semester (not shown on transcript yet)- **Machine Learning, Software Development**
- Awards and Honors: Engineering Honors Program, BOLD Scholar, College of Engineering Dean's List
- Clubs and Organizations: CU Women's Ultimate Frisbee, Society of Women Engineers (SWE)

RELEVANT COURSEWORK

Artificial Intelligence, Fall 2020

- Used object-oriented programming to implement a variety of algorithms used in artificial intelligence

ENGINEERING EXPERIENCE

Kapteyn-Murnane Group, JILA-University of Colorado Boulder
Student Researcher, June 2017-August 2020

- Designed and built a commercial-quality M^2 laser diagnostic device using MATLAB. I interfaced multiple pieces of scientific equipment and created a graphical user interface to collect and analyze data. The program characterized a laser beam by implementing a modified phase-retrieval algorithm.
- Interfaced a novel laser system with an existing chemical engineering experiment. Used SDK Driver.

Gateway to Space Class
Team Leader, August-December 2018

- Led a team to build and design an experiment for a high-altitude weather balloon. I contributed to the programming, electronics, structural design, testing, and presentation of the engineering project. The experiment consisted of a muon detector and various other sensors connected to an Arduino using C.

PUBLICATIONS

- L. Rego, K. Dorney, N. Brooks, Q. Nguyen, C. T. Liao, J. San Román, D. Couch, **A. Liu**, E. Pisanty, M. Lewenstein, L. Plaja, H. C. Kapteyn, M. M. Murnane, & C. Hernández-García. *Generation of extreme-ultraviolet beams with time-varying orbital angular momentum.* Science 364, 6447 (2019). DOI: 10.1126/science.aaw9486
- D. Couch, Q. Nguyen, **A. Liu**, D. Hickstein, H. Kapteyn, M. Murnane, & N. Labbe. *Detection of the Keto-Enol Tautomerization in Acetaldehyde, Acetone, Cyclohexanone, and Methyl Vinyl Ketone with a Novel VUV Light Source.* Proc. Combust. Inst. 38 (in press 2020). DOI: 10.1010/j.proci.2020.06.139

ADDITIONAL SKILLS AND INTERESTS

- ***Partnerships for Informal Education in the Community (PISEC), February 2020 - Present***
  - Volunteer weekly as a mentor for STEM students of underrepresented minorities
- MATLAB, C++, Python, Mathematica
- Machining, soldering
- Speak Mandarin Chinese
- CPR and First-Aid Certification
- Climbing Gym Routesetter at University of Colorado Boulder