

Allison Liu

Curious and motivated student seeking to provide programming and analysis experience to scientific and industrial applications.

EDUCATION

B.S. Applied Math, Computer Science Minor

University of Colorado Boulder, Expected Graduation May 2022

- **GPA: 3.707/4.000**
- Relevant Coursework: Computer Science- Data Structures, **Algorithms, Artificial Intelligence, Machine Learning, Software Development, Database Systems**
Math- Calculus, Probability, **Linear Algebra, Numerical Analysis, Statistics, Chaos/Dynamical Systems**
- Awards and Honors: Engineering Honors Program, BOLD Scholar, College of Engineering Dean's List
- Clubs and Organizations: Society of Women Engineers (SWE), CU Women's Ultimate Frisbee

WORK EXPERIENCE

Laboratory for Atmospheric and Space Physics (LASP) - University of Colorado Boulder

Student Research Assistant, February 2021 - Present

- Build, train, and optimize a generative adversarial network to create a machine-learning ready dataset for solar flare prediction. Using historic and current magnetogram data—Data pre-processing and exploration, feature engineering, and statistical analysis of results.

Kapteyn-Murnane Group, JILA - University of Colorado Boulder

Student Research Assistant, June 2017 - August 2020

- Designed and built a commercial-quality M² laser diagnostic device in MATLAB. I interfaced multiple pieces of scientific equipment and created a graphical user interface to collect and analyze data. Later implemented a modified phase-retrieval algorithm to fully characterize a laser beam.
- Interfaced a novel laser system with an existing chemical engineering experiment.

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 (2021). DOI: 10.1010/j.proci.2020.06.139

VOLUNTEERING

Machine Learning STEM Camp, May 2021 – July 2021

- Developed and taught machine learning curriculum to high school students for a STEM summer camp

Partnerships for Informal Education in the Community (PISEC), February 2020 – May 2020

- Volunteered weekly as a mentor for STEM students of underrepresented minorities outside of Boulder

ADDITIONAL SKILLS AND INTERESTS

- Technical Languages: Python, MATLAB, C++, SQL, HTML, CSS
- Tools and Technologies: Mathematica, Unix/Linux, Git, Latex, Bash Shell
- CPR and First-Aid Certification
- Climbing gym Routesetter at University of Colorado Boulder (September 2020-Present)