Nathaniel S. Keplinger

720-346-4333 | nathankep@gmail.com | https://www.linkedin.com/in/nathaniel-keplinger/ | nkepling.github.io/nkblog

Education

Colorado School of Mines, Golden, CO — Expected Graduation Dec 2022
Master of Science – **MS Data Science**

Trinity University, San Antonio, TX — August 2017 - May 2021
Bachelor of Science – majors in **Physics** and **Chinese**

CET - Harbin Institute of Technology, Harbin, China — Summer 2019
Intensive Chinese nine-week language program.

Relevant Coursework

Machine Learning, Data Science, Statistical Methods, Signal Processing, Partial Differential Equations, Linear Algebra, Differential Equations, Advanced Photonics, Classical Mechanics, Statistical Physics and Thermodynamics, Quantum Physics 1, Waves and Optics | Advanced Chinese, Classical Chinese

Research Experience

Department of Computer Science, Colorado School of Mines, Golden CO — September 2021 – Present

- Project: a newly started project to collect, characterize and analyze building data from across the Mines Campus
    - The hope is to diagnose the usefulness of data related to energy use, HVAC systems, and other building subsystems for potential optimization and predictive modeling.

Department of Physics and Astronomy, Trinity University, San Antonio TX — August 2019 – May 2021

- Project: analyzing the acoustic spectra of various oboe sound files.
    - Programmed models with MATLAB code to window the audio files, take Fourier transforms, locate harmonics of the spectrum and their peaks, and other algorithms to better understand how the timbre of an oboe presents itself in the acoustic spectra. Data scientists can leverage these acoustic features for machine learning purposes.
    - Quantified and located the portions of the acoustic spectra that contribute classify various oboes.
- Project: derive a group-theoretical description for the permutation symmetries of four ultracold atoms.
    - Constructed a hyper-spherical representation for the four-particle permutation group.
    - Characterized the utility of the new particle representation in simplifying computational solutions to the Schrödinger equation.

Skills

Programming Languages: C++, Scala, Python (NumPy, Pandas, Scikit-learn), SQL, MATLAB
Software: Creo Parametric 3.0, Microsoft Excel, Jupyter Notebooks
Languages: Chinese (Advanced), Spanish (Intermediate)
Lab Experience

- Validated the dimension specifications of bacteria and metal samples using an atomic force microscope to image, analyze and measure these samples.
- Utilized lock-in amplifiers and oscilloscopes for modulation spectroscopy to examine laser and other optical properties.
- Interpreted lab data and wrote technical lab reports with relevant error analysis in LaTeX.

Leadership

Communications Chair, Trinity University Student Government Association — January 2019 – May 2019

- Facilitated communication between the student senate and student president.
- Wrote and published press releases in the campus newspaper on behalf of the Student Government.

Campus Involvement

Colorado School of Mines Chess Club Member — August 2021 – Present
Trinity University Chess Club Member — August 2017 – May 2021
Trinity University Club Lacrosse Treasurer and Member — January 2017 – May 2020