Zhuofu (Chester) Li

zhuofu@uw.edu | Personal Website
LinkedIn | Github
Seattle, WA - 98107, USA

Education

- **University of Washington, Seattle (UW, Seattle)** *Sep 2022 - Present*
  Dual Ph.D. in Astrophysics and Astrobiology; Dual M.S. in Astrophysics and Statistics Seattle, WA, USA
  - GPA: 3.92/4.00
- **University of California, Los Angeles (UCLA)** *Sep 2018 - Jun 2022*
  Dual B.S. in Astrophysics and Geophysics with Highest Honors Los Angeles, CA, USA
  - GPA: 3.88/4.00

Projects

- **LSST Asteroid Streak Detection Using Convolutional Neural Network** *Jan 2024 - Present*
  University of Washington, Seattle
  - Developed a machine learning algorithm to detect faint, fast-moving asteroids in large datasets, enhancing detection sensitivity with a U-Net-based CNN.
  - Managed and processed large datasets using Python, including injecting synthetic sources to create training and testing datasets with known ground truth for model validation.
  - Led simulations and hyperparameter tuning, applying advanced statistical methods to improve detection accuracy.
- **Estimates of Rotation Periods for Jupiter Trojans with ZTF Photometric Light Curves** *Sep 2022 - Sep 2024*
  University of Washington, Seattle
  - Analyzed large time-series datasets using Python and Lomb-Scargle periodogram to estimate rotation periods for 2073 Jupiter Trojans.
  - Applied statistical methods to identify trends and relationships, providing insights into the formation and evolution of these objects.
  - Developed robust methods for analyzing light curves and phase-folded data, resulting in high-confidence period estimates, supported by comparisons with the Asteroid Lightcurve Database.
- **A Systematic Search for Short Orbital Period Cataclysmic Variables Using ZTF** *Jan 2021 - Oct 2022*
  California Institute of Technology
  - Systematically searched for cataclysmic variables (CVs) with short orbital periods using ZTF light curves, identifying 235 objects, including 176 newly discovered CVs.
  - Employed advanced data analysis techniques such as Gaussian Process Regression and Lomb-Scargle periodogram to detect periodic variability in CVs despite challenges from irregular sampling and brightness variability.
  - Classified objects based on light curve shapes, Gaia parallax, and color data from Pan-STARRS and WISE, identifying 50 high-confidence CV candidates, including several period bouncers.

Skills

- **Programming Languages:** Python, C++, R, Java, HTML
- **Statistical Analysis:** Time-Series Analysis, Probability, Simulation-Based Inference, Pattern Recognition
- **Machine Learning:** Deep Learning, Natural Language Processing, Supervised/Unsupervised Learning, Reinforcement Learning
- **Data Management:** Large Dataset Handling, Simulation, Backtesting
- **Quantitative Research:** Statistical Modeling, Algorithm Development

Certifications

- **Stanford University:** Machine Learning Specialization *2024*
- **New York Institute of Finance:** Machine Learning for Trading Specialization *2024*
- **DeepLearning.AI:** Deep Learning Specialization *2024*
- **DeepLearning.AI:** TensorFlow Developer Professional Certificate *2024*