Xue Li, Ph.D.

Email: lixue.liv@outlook.com
Linkedin: https://www.linkedin.com/in/xue-li-1a9552267
Github: https://lixueliv.github.io

Summary

Ph.D. in Astrophysics and Cosmology with a strong track record of leading and contributing to scientific research projects. Specializing in data analysis, machine learning, and AI. Proven ability to identify and solve complex problems using innovative data-driven solutions. Expertise in pattern and trend recognition, data modeling, and anomaly detection. Notable for pioneering the use of gamma-ray burst supernovae as standard candles and leading the groundbreaking discovery of the anomalous cosmic phenomenon AT2018cow as a black hole with quasi-periodic oscillations. Recognized for analytical thinking and innovation.

Professional Experience

2022-up to date: Self-employed, data scientist

- Leveraged data analysis, machine learning, and statistical methods to provide insights into a variety of projects.
- Independently managed projects, ensuring timely and high-quality deliverables.

2016-2022: **Research Associate, physics department, Tsinghua University, China**

- Served as Principal Investigator for National Post-doc Fundings and actively participated in National Fundings.
- Pioneered the discovery of the cosmic phenomenon AT2018cow's origin, presenting this achievement at American Astronomical Society (AAS) meetings, significantly advancing astrophysical understanding.
- Conducted cutting-edge astrophysics research with international teams, applying advanced mathematical and statistical tools for time series data analysis, and contributing to multiple projects and publications.

2014-2016: Visiting researcher, Niels Bohr Institute, University of Copenhagen, Denmark

- Collaborated with a global network of astrophysicists, using computational skills to analyze complex datasets.

Education

2010-2014: PhD in Astrophysics and Cosmology, Niels Bohr Institute, University of Copenhagen, Denmark

- Pioneered the discovery that gamma-ray burst supernovae can be used as standard candles, enabling astronomers to better understand the expansion of the universe, highlighted by Sky & Telescope Magazine.

2006-2009: MSc in Physics, Dalian University of Technology, China

2002-2006: BSc in Physics, Dalian University of Technology, China

Skills

- Python, IDL, Matlab, SQL, TensorFlow, R, PyTorch, Deep Learning, AI, Microsoft Power Platform, Azure, Data Analysis and Modeling

- Probability and Statistics, Geometry, Differential Geometry, Mathematical Methods of Physics, Numerical Recipes, Signal Processing and Analysis

IT Certifications

- TensorFlow Developer Certificate
- Microsoft Certified: Power Platform Solution Architect Expert
- Microsoft Certified: Azure Data Scientist Associate
- Microsoft Certified: Azure AI Engineer Associate
- Microsoft Certified: Power BI Analyst Associate
- Microsoft Certified: Power Platform Functional Consultant Associate

Selected leading and contributed projects

1. Supernova Classification with AI and ML
- Supervised students in studies of supernovae classification using AI.
- Collaborated on data collection, ML model building, and data analysis using SQL, TensorFlow, and Python.

2. Web Scraping and ML for Netizen Behavior Analysis
- Led a project on netizen behavior analysis through social media analysis.
- Applied web scraping techniques to collect real-time social media data, and utilized ML techniques and statistical tools such as TensorFlow, Python and SQL for natural language processing, pattern recognition, and trend analysis.

3. Time Series Analysis of AT2018cow: Black Hole Discovery
- Initiated and led a scientific project on the anomalous cosmic phenomenon AT2018cow, where I was the first to discover that AT2018cow was a black hole with quasi-periodic oscillations.
- Designed the scientific approach, applied mathematical and statistical tools to analyze time series data, and presented these groundbreaking findings at the American Astronomical Meeting in 2022.

4. Multidimensional Analysis of SN 2018oh: Origin of Supernova Explosions
- Contributed to a scientific project on the cosmic phenomenon SN 2018oh, utilizing Matlab and Python for analyzing spectra and light curves.
- Identified the origin of supernova explosions, highlighted by phys.org.

5. Data-Driven Discovery: Gamma-ray Burst Supernovae as Standard Candles
- Pioneered the discovery that supernovae associated with Gamma-ray bursts can be used as standard candles, highlighted by Sky & Telescope Magazine.

6. Diverse Scientific Projects in Data Analysis and Data Science
- Led and contributed to 10+ projects and 20+ scientific papers focused on data analysis and data science in the field of scientific research.

Awards and Scholarships

2020: 'Excellent Tutor' awarded by Beijing Association for Science and Technology.
2006-2009: National scholarship recipient for master's studies.
2006: Awarded a postgraduate placement without an entrance test.
2002: Named 'Best Debater' and represented the college to win third place in the university-level debate competition.
2001: Third prize in the Chinese Physics Olympiad.