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. 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.
- 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. Why Attention Is All You Need
- Studied attention mechanisms and human consciousness
- Discussed methods for model training and model development for future more ethic and powerful AI models

2. Web Scraping and LLMs 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 LLMs and statistical tools such as TensorFlow, Python and SQL for natural language processing, pattern recognition, and trend analysis.

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

4. 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, significantly advancing astrophysical understanding.
- Designed scientific approach, developed tools for data analysis and modeling, and presented these pioneered findings at the American Astronomical Meeting in 2022.

5. 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.

6. 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.

7. 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.