Weitian LI

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Ph.D. (candidate), Physics Shanghai Jiao Tong University (SJTU)
Shanghai Shaoyang, Hunan September 26, 1991

Highly-motivated Ph.D. candidate in Physics with good foundations of math and statistics. Proficient in data modeling and analysis. Enthusiastic about computer and network technologies, and skilled in Python, Shell, and various command line tools with 10 years experience in Linux and BSD. Have passion in open source and shared multiple projects on my GitHub. Meanwhile a DragonFly BSD developer and involved in several other open source projects. Looking to join your company that I can grow with as I achieve company goals.

Competences & Languages

Operating Systems	Linux (10 years), BSD (DragonFly BSD, FreeBSD; 7 years)
Programming	Python, Shell, C; R, Julia
Tools	Ansible; SSH, tmux, Git, make; Regular expression
Web Development	Django, Tornado; jQuery, Bootstrap; JavaScript, HTML5
Data Analysis	R, pandas, scikit-learn; matplotlib, ggplot2; SQL
Languages	**English** — reading & writing (good); listening & speaking (conversant)

Education

present — School of Physics and Astronomy, **Shanghai Jiao Tong University**
September 2013 — Ph.D. (candidate; expected to graduate in the first half of 2019) in Physics

June 2013 — Department of Physics and Astronomy, **Shanghai Jiao Tong University**
September 2009 — Bachelor's Degree in Applied Physics

Research Projects

present – January 2015 | **Simulation of Low-Frequency Radio Sky and Separation of Weak Astronomical Signals**
Key Program, National Natural Science Foundation of China

- Collaborated in classifying the radio galaxies according to the morphologies using a deep Convolutional Neutral Network (CNN).
- Developed the `FG21sim` software to simulate low-frequency radio sky images.
- Used algorithms such as wavelet to denoise and enhance X-ray astronomical images.
- Extracted both the spatial and spectral information of X-ray images, and used the Support Vector Machine (SVM) to identify the potential point sources.
- Significantly improved the modeling of radio halos, and integrated the instrumental effects of radio interferometers into the simulation pipeline.

Python | High-performance computing | Machine learning | CNN | SVM | Image processing

December 2014 – July 2012 | **The X-ray Study of Galaxies and Clusters of Galaxies, and the Research of Cosmic Low-Frequency Radio Radiation**
Fund for Distinguished Young Scholars, National Natural Science Foundation of China

- Reduced the data of over 200 galaxy clusters observed by the *Chandra* X-ray Observatory, and analyzed the images and spectra.
- Built a sample of galaxy clusters, collected optical data from SDSS, and investigated the correlation between the central emission excess and the central dominating galaxy.
- Developed and maintained a suite of data analysis utilities: `chandra-acis-analysis`.

Python | Shell | Data reduction | Statistical analysis

Publications

- **Li, W.**, Xu, H., Ma, Z., Hu, D., Zhu, Z., Shan, C., Wang, J., Gu, J., Lian, X. & Zheng, Q., "*Simulating Radio Halos and Evaluating Their Contamination on the Epoch of Reionization Observations*," 2018, The Astrophysical Journal (submitted; SCI; IF=5.533)
- Ma, Z., Xu, H., **Li, W.**, Shan, C., Hu, D., Zhu, Z., Lian, X., Zhang, Z., Liu, C. & Wu, X.-P., "*A Machine Learning Based Morphological Classification of 14,251 Radio Galaxies Selected from the Best-Heckman's Sample*," 2018, The Astrophysical Journal Supplement Series (submitted; SCI; IF=8.955)

- Zheng, Q., Johnston-Hollitt, M., Duchesne, S. & **Li, W.**, "*Detection of a Double Relic in the Torpedo Cluster: SPT-Cl J0245-5302,*" 2018, Monthly Notices of the Royal Astronomical Society (accepted; SCI; IF=4.961)
- Hu, D., Xu, H., Kang, X., **Li, W.**, Zhu, Z., Ma, Z., Shan, C., Zhang, Z., Gu, L., Liu, C. & Wu, X.-P., "*A Study of the Merger History of the Galaxy Group HCG 62 Based on X-ray Observations and SPH Simulations,*" 2017, The Astrophysical Journal, (in revision; SCI; IF=5.533)
- Ma, Z., Zhu, J., **Li, W.** & Xu, H., "*An Approach to Detect Cavities in X-ray Astronomical Images Using Granular Convolutional Neural Networks,*" 2017, IEICE Transactions on Information and System, 100(10), 2578 (SCI; IF=0.41)
- Zhang, C., Xu, H., Zhu, Z., **Li, W.**, Hu, D., Wang, J., Gu, J., Gu, L., Zhang, Z., Liu, C., Zhu, J. & Wu, X.-P., "*A Chandra Study of the Image Power Spectra of 41 Cool Core and Non-cool Core Galaxy Clusters,*" 2016, The Astrophysical Journal, 823, 116 (SCI; IF=5.533)
- (and 3 more co-authored SCI papers)

Main Experience

May 2018 – April 2018 — Intern (data engineer) @ Leadvisor Technology Inc. (startup company)
- Search and scrape product information from Amazon web pages using Python.
- Deploy Airflow to periodically execute the data scraping tasks.

Data mining | Web analysis | Python | Airflow

present – March 2018 — DragonFly BSD developer
- Improve kernel networking tools.
- Update RC scripts and build system.
- Discuss and answer questions in mailing list and IRC channels.

BSD | Open source | Programming | Networking

present – April 2017 — Use Ansible to manage a VPS running DragonFly BSD which serves personal email, authoritative DNS, website, CalDAV/CardDAV, Git, IRC, etc.

BSD | Ansible | Postfix | Dovecot | DNS | Nginx | Firewall

December 2016 — Built and administrated a 4-node computer cluster for the team to research the galaxy cluster merger processes by carrying out hydrodynamic simulations.

Linux | NFS | iptables | Slurm | Numerical simulation

September 2016 — Participated "The 13th China Post-Graduate Mathematical Contest in Modeling."
- Learned the Genome-Wide Association Study (GWAS) method to locate the most likely Single-Nucleotide Polymorphisms (SNPs) associated with a trait or disease.
- Used the R programming language to perform Logistic regressions and hypothesis testings between SNPs and traits, and identified the most possible SNPs and genes that may cause the disease.

R | Data cleansing | Regression analysis | Hypothesis testing

July 2014 – April 2014 — Organized "The 1st China–New Zealand Joint SKA Summer School."
- Designed and made the poster.
- Designed and developed the website, providing functionalities including user registration, agenda management, announcements, lecture downloads, etc.

Design | Django | Bootstrap | jQuery | JavaScript | MySQL

September 2013 – July 2013 — Summer intern @ 97 Suifang (startup company)
- Developed the website to help patients with *hepatitis B* track various indicators in their analysis reports.
- Implemented the user registration, data storage and search functions in the back end.
- Used AJAX in the front end to visualize the temporal variations of the indicators.

Database | Data visualization | Django | AJAX

Awards & Certificates

September 2016	Participation Award, The 13th China Post-Graduate Mathematical Contest in Modeling
July 2014	Outstanding Teaching Assistant, College Physics
November 2013	Outstanding Ph.D. Student Entrance Scholarship of Shanghai Jiao Tong University
December 2011	National Astronomical Observatory Scholarship
September 2011	Network Engineer (Level 4), National Computer Rank Examination