Lijun Zhu

Research Assistant · Signal/Data Analysis

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Summary

Ph.D. student majored in Electrical Engineering working on large-scale data processing and statistical model prediction challenges. Passionate about data science and machine learning algorithms. Co-author of FDTD simulation tool *S3I* and contributing to *Obspy*, the open-source seismic signal processing tools. Maintaining Linux HPC cluster and built computer server as a hobby.

Education

Georgia Institute of Technology — *Atlanta, GA*

Ph.D. student in Electrical Engineering — *Aug. 2014 - PRESENT*

- Research topic: detection and estimation through signal processing, statistical, and machine learning tools.
- Advisor: Professor James H. McClellan.
- Expected graduated in 2018 (GPA = 3.91/4.00).

Georgia Institute of Technology — *Atlanta, GA*

B.Sc. in Electrical Engineering — *Aug. 2009 - May. 2013*

- Developed and maintained online tutorial system for DSP undergraduate courses.
- Designed and tested keyword spotting algorithm for always-on voice recognition system.
- Built peripheral circuits and wrote programs on Texas Instruments MSP430 chip.
- Graduated with Highest Honor (GPA = 3.96/4.00).

Skills

Coding	Python, C/C++, MATLAB®, LaTeX, Bash, Assembly/VHDL, Verilog, Perl, PHP, HTML/CSS, SQL
Software	NumPy/SciPy, scikit-learn, PyTorch, TensorFlow, OpenCV, awk/sed, GNU Parallel, ssh/scp
Hardware	NI Labview/DAQ, acoustic measurement, soldering, oscilloscope, logic analyzer

Experience

Georgia Institute of Technology — *Atlanta, GA*

Research Assistant — *Sep. 2014 - PRESENT*

- Prepare and process large data using bash/awk script on Linux/Unix servers.
- Design, prototype, and test machine learning algorithms using *Python* on large-scale dataset with tools like PyTorch and Tensorflow.
- Maintain and upgrade Linux HPC cluster and storage system.
- Develop and support in-house numerical (FD) simulation tools for elastic wave propagation in complex medium.

Houston Research Center, Aramco Service Company — *Houston, TX*

Research Intern — *Aug. 2015 - Nov. 2015*

- Wrote *Python/MATLAB* tools for organizing and processing large-scale dataset (> 1TB).
- Processed land acquisition data searching for small events in the noisy environment.
- Tested machine learning algorithms for dimension reduction, image segmentation and object tracking on spectrogram domain.

Microsoft Research — *Redmond, WA*

Research Intern — *May. 2014 - Aug. 2014*

- Wrote numerical simulation tools for ultrasonic wave propagation in *C++* with a *MATLAB* interface.
- Conducted acoustic measurements in anechoic chamber testing prototype products.
- Documented progress and results in published research papers.

Bose Coporation — *Framingham, MA*

Research Co-op — *Jan. - May., Aug. - Dec. 2012*

- Worked with marketing team in identifying customer's requirements and make product definition.
- Led the product prototyping in early stage and make demonstration to executives.
- Updated *MATLAB* and *Perl* script to automate testing procedure.
- Assisted adaptive microphone array design for conference setup.

Services

SEG Student Chapter in Georgia Tech — *Atlanta, GA*

Vice President & President — *Jun. 2016 - PRESENT*

- Organized annual meeting and community services in 2016.
- Led the development of student chapter website redesign in 2017.

IEEE Student Chapter in Georgia Tech — *Atlanta, GA*

Secretary — *Feb. 2011 - Oct. 2011*

- Organized meetings and community services.
- Kept meeting minutes and updated chapter website.

Honors & Awards

2017	**Finalist,** Alibaba Cloud Aftershock Detection Contest	*Hangzhou, China*
2016	**Travel Grant,** SEG/Chevron Student Leadership Symposium	*Dallas, TX*
2012	**Faculty Honor,** Georgia Institute of Tehcnology	*Atlanta, GA*
2011	**Faculty Honor,** Georgia Institute of Tehcnology	*Atlanta, GA*
2010	**Faculty Honor,** Georgia Institute of Tehcnology	*Atlanta, GA*

Publication

Referenced Journals

- Lijun Zhu, Entao Liu, and James H McClellan. A multi-channel approach for automatic microseismic event localization using ransac-based arrival time event clustering (ratec). *arXiv preprint arXiv:1702.01856*, 2017
- Entao Liu, Lijun Zhu, Anupama Govinda Raj, James H. McClellan, Abdullatif Al-Shuhail, SanLinn I. Kaka, and Naveed Iqbal. Microseismic events enhancement and detection in sensor arrays using autocorrelation-based filtering. *Geophysical Prospecting*, 65(6):1496–1509, 2017

Conference Abstracts

- Lijun Zhu, Entao Liu, James McClellan, Yang Zhao, Weichang Li, Zefeng Li, and Zhigang Peng. *Estimation of passive microseismic event location using random sampling-based curve fitting*, pages 2791–2796. 2017
- Lijun Zhu, Entao Liu, James H. McClellan, Zhigang Peng, and Zefeng Li. Classification of arrival-time picks for microseismic event localization. In *79th EAGE Conference and Exhibition 2017*, June 2017
- Lijun Zhu, Zefeng Li, Zhigang Peng, Entao Liu, and James H. McClellan. Weighted random sampling in seismic event detection/location (wrased): Applications to local, regional, and global seismic networks. *Seismological Research Letters*, 88(2B):463–723, 2017
- Zefeng Li, Lijun Zhu, Zhigang Peng, and James McClellan. *High-resolution microseismic detection and location using Large-N arrays*, pages 59–63. 2017
- Lijun Zhu, Entao Liu, and James H. McClellan. An automatic arrival time picking method based on RANSAC curve fitting. In *78th EAGE Conference and Exhibition 2016*. EAGE, May 2016
- Entao Liu, Lijun Zhu, and James H. McClellan. Microseismic events enhancement in sensor arrays using autocorrelation based filtering. In *78th EAGE Conference and Exhibition 2016*. EAGE, May 2016
- L. Zhu, E. Liu, and J. H. McClellan. Full waveform microseismic inversion using differential evolution algorithm. In *2015 IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, pages 591–595, Dec 2015
- L. Zhu and D. Florencio. 3D numerical modeling of parametric speaker using finite-difference time-domain. In *2015 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pages 5982–5986, April 2015