Yuping Lu

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Education

University of Tennessee, Knoxville, TN 2013 - 2019
Ph.D. in Computer Science
Research Interests: Machine Learning, Graph Algorithm, Bioinformatics
Dissertation: Advances in Big Data Analytics: Algorithmic Stability and Data Cleansing
Advisor: Dr. Michael A. Langston | GPA: 3.91

Nanjing Agricultural University, Nanjing, China 2007 - 2011
BEng in Computer Science
Advisor: Dr. Huanliang Xu | GPA: 3.64

Experience

Katana Graph, Lakewood, CO
Machine Learning Engineer, graph AI platform team Oct. 2021 - May 2023
- Implemented Graph Neural Networks algorithms and infrastructure.
- Implemented end-to-end pipelines of data analysis.

Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA
Postdoctoral Scholar, the Advanced Light Source Sept. 2019 - Sept. 2021
- Improved algorithm for Lattice Optimization using Deep Learning.
- Achieved orders of magnitude speedup on HPC clusters.

Oak Ridge National Laboratory (ORNL), Oak Ridge, TN
Graduate Research Assistant, the ARM Data Center Oct. 2017 - Aug. 2019
- Radar data (NEXRAD, ARM CSAPR) classification using convolutional neural networks.
- Detected outliers in streaming time series data from ARM distributed sensors.

Research Intern, the Scientific Data Group Summer 2016, 2017
- Developed pbdR tools for singularity container.
- Implemented an R package pbdADIOS to connect R with ADIOS.

University of Tennessee, Knoxville, TN
Graduate Research Assistant, the Office of Information Technology July 2014 - Oct. 2017
- University web server configuration and optimization.
- Google Search Appliance administration and implementation.

Graduate Research Assistant, Dr. Michael A. Langston's lab Aug. 2013 - July 2014
- Implemented an R package biclique to enumerate maximal bicliques.
- Upgraded GrAPPA which is a web-based interface for graph theoretical tools.

Publications

1. Demonstration of Machine Learning-enhanced Multiobjective Optimization of Ultrahigh-brightness Lattices for Fourth-generation Synchrotron Light Sources
   Yuping Lu, Simon C. Leemann, Changchun Sun, Michael P. Ehrlichman, Hiroshi Nishimura, Marco Venturini, Thorsten Hellert
   Nuclear Inst. and Methods in Physics Research, A (2023): 168192

2. Enhancing the MOGA Optimization Process at ALS-U with Machine Learning
   Yuping Lu, Simon C. Leemann, Changchun Sun, Michael P. Ehrlichman, Thorsten Hellert, Hiroshi Nishimura,

Marco Venturini
IPAC 2021

3. Clique Selection and its Effect on Paraclique Enrichment: An Experimental Study
Yuping Lu, Charles A. Phillips, Elissa J. Chesler, Michael A. Langston
Proceedings of the 12th International Conference on Bioinformatics and Computational Biology (BICOB 2020)

4. Biclique: Maximal Biclique Enumeration in Bipartite Graphs
Yuping Lu, Charles A. Phillips, Michael A. Langston
BMC Research Notes 13, 88 (2020)

5. A Robustness Metric for Biological Data Clustering Algorithms
Yuping Lu, Charles A. Phillips, Michael A. Langston
BMC Bioinformatics 2019, 20(Suppl 15):503

6. Convolutional Neural Networks for Hydrometeor Classification using Dual Polarization Doppler Radars
Yuping Lu, Jitendra Kumar
Proceedings of the 2019 IEEE International Conference on Data Mining Workshops (ICDMW 2019)

7. Detecting Outliers in Streaming Time Series Data from ARM Distributed Sensors
Yuping Lu, Jitendra Kumar, Nathan Collier, Bhargavi Krishna, Michael A. Langston
Proceedings of the 2018 IEEE International Conference on Data Mining Workshops (ICDMW 2018)

8. Enrichment vs Robustness: A Comparison of Transcriptomic Data Clustering Metrics
Yuping Lu, Charles A. Phillips, Michael A. Langston
BMC Bioinformatics 17 (10), 297, August 2016

9. Digital Gene Expression Profiling of the Phytophthora Sojae Transcriptome
Wenwu Ye, Xiaoli Wang, Kai Tao, **Yuping Lu**, Tingting Dai, Suomeng Dong, Daolong Dou, Mark Gijzen, Yuanchao Wang
Molecular Plant-Microbe Interactions, 24(12):1530–1539, December 2011

Posters & Talks

1. Enhancing the MOGA Optimization Process at ALS-U with Machine Learning
Yuping Lu, Simon C. Leemann, Changchun Sun, Michael P. Ehrlichman, Thorsten Hellert, Hiroshi Nishimura, Marco Venturini
IPAC 2021 — Campinas, Brazil, May 24, 2021

2. Improving Multi-objective Genetic Algorithm for Lattice Optimization with Machine Learning
Yuping Lu, Changchun Sun, and Simon C. Leemann
ALS User Meeting 2020 — Berkeley, California, August 25, 2020

3. Beam Based Optimization and Machine Learning for Synchrotrons
Charles Nathan Melton, **Yuping Lu**, Shuai Liu, Hiroshi Nishimura, Matthew Marcus, Changchun Sun, Alexander Hexemer, Simon C. Leemann
ALS User Meeting 2019 — Berkeley, California, October 1, 2019

4. Convolutional Neural Networks for Hydrometeor Classification Using Dual Polarization Doppler Radars
Yuping Lu, Jitendra Kumar
2019 ARM/ASR PI Meeting — Rockville, MD, June 11, 2019

5. A Robustness Metric for Biological Data Clustering Algorithms
Yuping Lu, Charles A. Phillips, Michael A. Langston
ISBRA 2018 - Beijing, China, June 10, 2018

6. Outlier Detection for SGPMET Data
Yuping Lu, Jitendra Kumar

ORNL, April 04, 2018

Technical Skills

Programming languages:	C/C++, Python, R, PHP, HTML+CSS+Javascript
Tools:	PyTorch, PyG, Jupyter, NumPy, Conda, Git, LaTeX
Cloud Computing:	AWS, GCP, Docker, Kubernetes
HPC experience:	ORNL CADES, LBNL NERSC

Activities and Awards

Reviewer for Computational Biology and Bioinformatics.	2020 - 2022
Klaus Halbach Award, Advanced Light Source, LBNL.	2021
Graduate Student Senate Travel Award, University of Tennessee, Knoxville.	2018
Reviewer for the 9th International Workshop on Algorithms and Computation.	2015
Reviewer for the 9th International Workshop on Frontiers in Algorithmics.	2015
Student Volunteer for XSEDE14 : Atlanta, GA, USA.	July 13-18, 2014
Department Excellence Award, University of Tennessee, Knoxville	2013
Outstanding Graduate and Several Scholarships, Nanjing Agricultural University	2007 - 2011

Media Coverage

Machine-Learning Team Receives 2021 Halbach Award August 30, 2021
Machine Learning Enhances Light-Beam Performance at the Advanced Light Source November 8, 2019