Qi (Rose) Yu

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RESEARCH	Large-Scale Spatiotemporal Learning, Deep learning, Tensor Methods, and their applications.

CURRENT APPOINTMENT

Northeastern University, Boston, Massachusetts
Assistant Professor, Khoury College of Computer Sciences   Aug 2018 - Present

PREVIOUS APPOINTMENT

California Institute of Technology, Pasadena, California
Postdoctoral Scholar, Computing + Mathematical Sciences   Aug 2017 - Aug 2018
- Advisors: Anima Anandkumar, Yisong Yue

Stanford University, Pasadena, California
Visiting Researcher, Computer Science Department   Aug 2016 - Oct 2016
- Host: Christopher Ré

IBM Research, Yorktown Heights, New York
Research Intern   June 2015 - Aug 2015

Yahoo! Labs, Sunnyvale, California
Research Intern   June 2014 - Aug 2014

Intel Lab, Santa Clara, California
Research Intern   May 2013 - Aug 2013

Microsoft R&D, Minghang, Shanghai
Program Manager Intern   June 2011 - June 2012

EDUCATION

University of Southern California, Los Angeles, California
Ph.D., Computer Science, Computer Science Department   Aug 2012 - Aug 2017
Thesis: Tensor Learning for Large-Scale Spatiotemporal Analysis
Finalist in William F. Ballhaus, Jr. Prize for Excellence in Graduate Engineering Research
- Advisors: Yan Liu, Cyrus Shahabi

Zhejiang University, Hangzhou, Zhejiang, PRC
B.S in Computer Science, Chu Kochen Honors College   Aug 2008 - June 2012
- Advisor: Zhihua Zhang

SELECTED AWARDS AND HONORS

Best Dissertation Award, University of Southern California, 2018

Best Paper Award, NIPS Time Series Workshop, 2017

SIGKDD Scholarship, ACM 50th Celebration of the Turing Award, San Francisco, 2017

Rising Stars in EECS, 40 Awardees in North America, MIT, 2015

Annenberg Graduate Fellowship, University of Southern California, 2012

Selected in ACM Heidelberg Laureate Forum , University of Heidelberg, 2013

Microsoft 2011 Young Fellowship, Microsoft Research Asia, 2011

International Forum (iF) Design Hanover Global Concept Award, iF, 2010

First prize in Undergraduate Research and Innovation, Zhejiang University, 2010

PREPRINTS

[P1] <u>Rose Yu</u>, Sung-En Chang, Xun Zheng, Ian E.H. Yen ,Pradeep Ravikumar "Efficient Tensor Decomposition with Boolean Factors" Preprint *arXiv:1810.04754*

[P2] Stephan Zheng, <u>Rose Yu</u>, Yisong Yue "Multi-resolution Tensor Learning for Large-Scale Spatial Data" Preprint *arXiv:1802.06825*

[P3] <u>Rose Yu</u>, Stephan Zheng, Anima Anandkumar, Yisong Yue "Long-term Forecasting using Tensor-Train RNNs" Preprint *arXiv:1711.00073*

[P4] Paroma Varma, Bryan He, Dan Iter, Peng Xu, <u>Rose Yu</u>, Christopher De Sa, Christopher Ré, "Socratic Learning", Preprint *arXiv:1610.08123*

CONFERENCE PUBLICATIONS

[C1] Nima Dehmamy, Albert-László Barabási, <u>Rose Yu</u>. "Understanding the Representation Power of Graph Neural Networks in Learning Graph Topology" To appear in *Proceeding of Advances in Neural Information Processing Systems* (NeurIPS), 2019

[C2] Yukai Liu, <u>Rose Yu</u>, Stephan Zheng, Eric Zhan, Yisong Yue. "NAOMI: Non-Autoregressive Multiresolution Sequence Imputation" To appear in *Proceeding of Advances in Neural Information Processing Systems* (NeurIPS), 2019

[C3] Guanya Shi, Xichen Shi, Michael O'Connell, <u>Rose Yu</u>, Kamyar Azizzadenesheli, Anima Anandkumar, Yisong Yue, Soon-Jo Chung "Neural Lander: Stable Drone Landing Control using Learned Dynamics" In *Proceedings of International Conference on Robotics and Automation* (ICRA), 2019

[C4] Yaguang Li, <u>Rose Yu</u>, Cyrus Shahabi, Yan Liu "Diffusion Convolutional Recurrent Neural Network: Data-Driven Traffic Forecasting" In *Proceedings of International Conference on Learning Representations* (ICLR), 2018

[C5] <u>Rose Yu</u>, Guangyu Li, Yan Liu. "Tensor regression meets Gaussian Processes." In *Proceedings of International Conference on Artificial Intelligence and Statistics* (AISTATS), 2018

[C6] <u>Rose Yu</u>, Yaguang Li, Ugur Demiryurek, Cyrus Shahabi, Yan Liu. "Deep Learning: A Generic Approach for Extreme Condition Traffic Forecasting." In *Proceedings of the Seventeenth SIAM International Conference on Data Mining* (SDM), 2017

[C7] <u>Rose Yu</u>, Yan Liu. "Learning from Multiway Data: Simple and Efficient Tensor Regression." In *Proceedings of the 33th International Conference on Machine Learning* (ICML), 2016

[C8] Dingxiong Deng, Cyrus Shahabi, Ugur Demiryurek, Linhong Zhu, <u>Rose Yu</u>, Yan Liu, "Latent Space Model for Road Networks to Predict Time-Varying Traffic", In *Proceeding of ACM SIGKDD Conference on Knowledge Discovery and Data Mining* (KDD), 2016

[C9] <u>Rose Yu</u>, Andrew Gelfand, Suju Rajan, Cyrus Shahabi, Yan Liu. "Geographic Segmentation via Latent Poisson Factor Model." in *ACM International Conference on Web Search and Data Mining* (WSDM), 2016

[C10] <u>Rose Yu</u>, Dehua Cheng, Yan Liu. "Accelerated Online Low Rank Tensor Learning for Multivariate Spatiotemporal Streams." In *Proceedings of the 32th International Conference on Machine Learning* (ICML), 2015

[C11] <u>Rose Yu</u>, Mohammad Taha Bahadori, Yan Liu. "Fast Multivariate Spatio-temporal Analysis via Low Rank Tensor Learning." In *Proceeding of Advances in Neural Information Processing Systems* (NIPS), 2014 **Spotlight**

[C12] <u>Rose Yu</u>, Xinran He, Yan Liu. "GLAD: Group Anomaly Detection in Social Media Analysis." In *Proceeding of ACM SIGKDD Conference on Knowledge Discovery and Data Mining* (KDD),2014

[C13] Cuixia Gao, Naiyan Wang, Qi Yu, Zhihua Zhang. "A Feasible Nonconvex Relaxation Approach to Feature Selection." In *Proceeding of 24th AAAI conference on Artificial Intelligence* (AAAI), 2011

[C14] Qi Yu, Zhihao Ding, Rong Rong, Wang Donghui, Zhengyue Zhang. "Dark Pixel Detection: A Novel Single Image Dehaze Approach". In *Proceeding of 27th Image and Vision Computing New Zealand* (IVCNZ), 2011

JOURNAL
PUBLICATIONS

[J1] Rose Yu, Yan Liu. "Spatio-Temporal Analysis of Social Media Data" In *Encyclopedia of GIS*, 2016

[J2] Rose Yu, Huida Qiu, Zhen Wen, Ching-Yung Liu, Yan Liu. "A Survey on Social Media Analysis Anomaly Detection" In *ACM KDD Exploration*, 2016

[J3] Rose Yu, Xinran He, Yan Liu. "GLAD: Group Anomaly Detection in Social Media Analysis - Extended Abstract." In ACM Transactions on Knowledge Discovery in Data (TKDD), 2015

SELECTED
WORKSHOP PAPERS
(UNREFEREED)

[W1] Rui Wang, Adrian Albert, Karthik Kashinath, Mustafa Mustafa, Rose Yu. "Towards physics informed deep learning for spatiotemporal modeling of turbulence flow". **Oral Presentation** at *Advances in Neural Information Processing Systems* (NeurIPS), Machine Learning for Physical Sciences workshop, 2019

[W2] Clara De Paolis, Saeed Amizadeh, Rose Yu. "A Neural Framework for Learning DAG to DAG Translation ". In *Advances in Neural Information Processing Systems* (NeurIPS), relational representation learning workshop, 2018

[W3] Rose Yu, Stephan Zheng, Anima Anandkumar, Yisong Yue. "Long-term forecasting using Tensor-Train RNN". **Best Paper Award** in *Advances in Neural Information Processing Systems* (NIPS), time series workshop, 2017

[W4] Yaguang Li, Rose Yu, Cyrus Shahabi, Yan Liu. "Diffusion Convolutional Recurrent Neural Network: Data-Driven Traffic Forecasting". **Oral Presentation** at *Advances in Neural Information Processing Systems* (NIPS), time series workshop, 2017

[W5] Rose Yu, Stephan Zheng. "Learning Chaotic Dynamics with Tensor RNN". In *International Conference on Machine Learning* (ICML), Deep structured prediction workshop, 2017

[W6] Rose Yu, Paroma Varma, Dan Iter, Chris De Sa, Christopher Re, "Socratic Learning". In *Advances in Neural Information Processing Systems* (NIPS) future of interactive machine learning workshop, 2016

RESEARCH GRANTS

[G1] NSF CRII, *IIS-1850349: Multiresolution Tensor Learning for Scalable and Interpretable Spatiotemporal Analysis*, $174,998, Aug, 2019 - July, 2021

[G2] Abiomed Research Grant, *Anticipating Patient Outcome via Machine Learning*, $50,000, July, 2019 - Sep, 2020

[G3] ONR ECP, *Subcontract: Learning and Prediction of Dynamic Processes on Evolving Networks*, $71,784, June, 2019 - Dec, 2019

[G4] Mathworks Microgrant, *Battery State of Health Machine Learning Prognostics*, $17,400, Sep, 2019 - Dec, 2019

[G5] Navy STTR, *Subcontract: Predictive Graph Convolutional Networks*, $28,840, March, 2019 - Oct, 2019

[G6] Northeastern Tier 1, *Physics-informed Deep Learning for High-Resolution Climate Extremes Modeling*, $50,000, July, 2019 - Sep, 2020

[G7] Northeastern Khory Seed Grant, *Learning Bimanual Robotic Manipulation Via Deep Graph Sequence* , $50,000, Aug, 2019 - Aug, 2020

TEACHING	**Machine Learning Seminar (CS 4950)**	Fall 2019
	Introduction to Computer Science Research (CS 3950)	Fall 2019
	Special Topics in AI: Deep Learning (CS 7180)	Spring 2018
	Machine Learning (CS 6140)	Fall 2018
INVITED TALK	**Year 2020**	
	Functional Data over Multidimensional Domain, EPFL, Switzerland,	April 2020
	AI for Robust Engineering and Science workshop, Oak Ridge National Lab	Jan, 2020
	Physics Informed Machine Learning workshop, Los Alamos National Lab	Jan, 2020
	Year 2019	
	Mitsubishi Electric Research Laboratories (MERL), Cambridge	Oct, 2020
	Plenary Speaker, European Research Network on System Identification	Sep, 2019
	Hazy Research Group Seminar, Stanford University	August, 2019
	KDD 2019 Tensor Methods Workshop, Anchorage	August, 2019
	University of Connecticut, Connecticut	July, 2019
	Google Research, Mountain View	July, 2019
	Machine Learning Theory Workshop, Peking University, China	June, 2019
	Auto Lab, University of Michigan, Ann Arbor	May, 2019
	ICLR 2019 Workshop on Deep Generative Models, New Orleans	May, 2019
	Tensor Working Group on Simons Foundation, New York	May 2019
	Workshop Low-rank Optimization and Applications, Leipzig, Germany	April, 2019
	Young European Probablists XV workshop, Eindhoven, Netherland	March, 2019
	Lawrence Berkeley National Laboratory (LBNL)	March, 2019
	Year 2018	
	Amazon Research, Palo Alto	Dec, 2018
	Salesforce Research, Palo Alto,	Dec, 2018
	Machine Learning Group Seminar, Harvard,	Nov 28, 2018
	Clinical Machine Learning Group Seminar, MIT,	Nov 13, 2018

Keynote Speaker, Climate Informatics 2018 (CI 2018),   Sep 2018

Henry L. Pierce Laboratory Seminar Series, MIT,   Sep 12, 2018

Japan RIKEN Center for Advanced Intelligence Project (AIP), Tokyo,   July 3, 2018

Disney Research, Burbank,   May 22, 2018

Year 2017

Department of Management Science, University of Miami   Nov 18, 2017

Department of Computing and Mathematically Sciences, Caltech   Oct 6, 2017

Center of Data Science, New York University   March 30, 2017

Department of Computer Science, Brown University   March 13, 2017

School of Industrial and Systems Engineering, Georgia Institute of Technology   March 6, 2017

College of Computer and Information Science, Northeastern University   March 3, 2017

AI with The Best, Online Conference   Sep 17, 2016

Computer Science Department, Stanford University   May 23, 2016

ACADEMIC SERVICE **Workshop Co-organizer**

ICML Time Series Workshop, 2019
ICML Time Series Workshop, 2017
NIPS Woman in Machine Learning Workshop, 2016
NIPS workshop on Learning with Tensors: Why Now and How? (Tensor-Learn), 2016

Conference Organizing Committee

KITP: At the Crossroad of Physics and Machine Learning, 2018
Poster Chair, KDD (2020)
Proceedings Chair, WSDM (2018)
Short Paper Chair, CIKM (2017)

Grant Reviewer/Panelist

Department of Energy (DOE) Review Panel, 2019
National Science Foundation (NSF) Review Panel, 2018, 2019

Senior Program Committee (or Area Chair)

ICML(2020), SDM (2020)

Program Committee

ICML (2020, 2019, 2018), NeurIPS (2019, 2018), ICLR (2020, 2019), KDD (2019), AISTATS (2020, 2019), SDM (2019), AAAI (2018), IJCAI (2018), CIKM (2017), NIPS Time Series Workshop (2016),

ICML Time Series Workshop (2016)

Reviewer

Proceedings of IEEE, Journal of Machine Learning Research (JMLR), Journal of Artificial Intelligence Research (JAIR), Transactions on Knowledge Discovery from Data (TKDD), IEEE Transactions on Knowledge and Data Engineering (TKDE), IEEE Intelligent Transportation Systems Transaction (ITS)