Qi (Rose) Yu

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Research Interests

Large-scale spatiotemporal learning, Deep learning, Tensor methods, and their applications.

Appointment

Northeastern University, Boston, Massachusetts
College of College of Computer and Information Science
Assistant Professor, Aug 2018 - Present
Adjunct Assistant Professor, Aug 2017 - Aug 2018

California Institute of Technology, Pasadena, California
Department of Computing and Mathematical Sciences
Postdoctoral Scholar, Aug 2017 - Aug 2018

- Advisors: Yisong Yue, Anima Anandkumar

Education

University of Southern California, Los Angeles, California
Ph.D., Computer Science, Aug 2012 - Aug 2017
Thesis: Tensor Learning for Large-Scale Spatiotemporal Analysis

- Advisors: Yan Liu, Cyrus Shahabi

Stanford University, Stanford, California
Computer Science Department
Visiting Student Researcher, Aug 2016 - Oct 2016

- Host: Christopher Ré

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

- Advisor: Zhihua Zhang

Selected Awards and Honors

Best Dissertation Award, Computer Science Department, University of Southern California, 2018

Best Paper Award at *Advances in Neural Information Processing Systems* (NIPS), time series workshop, 2017

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

Selected in MIT Rising Stars in EECS: An Academic Career Workshop for Women, MIT, 2015

Annenberg Graduate Fellowship, University of Southern California, 2012-present

Selected in ACM Heidelberg Laureate Forum - Abel, Fields, Turing laureates meet next generation, 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

Outstanding Undergraduate Award, Zhejiang University, 2009, 2008.

Preprints

[P1] Sung-En Chang, Xun Zheng, Ian E.H. Yen ,Pradeep Ravikumar, Rose Yu. "Learning Tensor Latent Features" Preprint *arXiv:1810.04754*

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

[P3] Rose Yu, 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, Rose Yu, Christopher De Sa, Christopher Ré, "Socratic Learning", Preprint *arXiv:1610.08123*

Conference Publications

[C1] Guanya Shi, Xichen Shi, Michael O'Connell, Rose Yu, 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

[C2] Yaguang Li, Rose Yu, Cyrus Shahabi, Yan Liu "Diffusion Convolutional Recurrent Neural Network: Data-Driven Traffic Forecasting" In *Proceedings of International Conference on Learning Representations* (ICLR), 2018

[C3] Rose Yu, Guangyu Li, Yan Liu. "Tensor regression meets Gaussian Processes." In *Proceedings of International Conference on Artificial Intelligence and Statistics* (AISTATS), 2018

[C4] Rose Yu, 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

[C5] Rose Yu, Yan Liu. "Learning from Multiway Data: Simple and Efficient Tensor Regression." In *Proceedings of the 33th International Conference on Machine Learning* (ICML), 2016

[C6] Dingxiong Deng, Cyrus Shahabi, Ugur Demiryurek, Linhong Zhu, Rose Yu, 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

[C7] Rose Yu, 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

[C8] Rose Yu, 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

[C9] Rose Yu, 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**

[C10] Rose Yu, 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

[C11] 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

[C12] 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

Workshops Publications

[W1] 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

[W2] Yaguang Li, Rose Yu, Cyrus Shahabi, Yan Liu. "Diffusion Convolutional Recurrent Neural Network: Data-Driven Traffic Forecasting". Oral and poster presentation at *Advances in Neural Information Processing Systems* (NIPS), time series workshop, 2017

[W3] Rose Yu, Stephan Zheng. "Learning Chaotic Dynamics with Tensor RNN". Poster accepted to *International Conference on Machine Learning* (ICML), Deep structured prediction workshop, 2017

[W4] Rose Yu, Stephan Zheng. "Learning Chaotic Dynamics with Tensor RNN". Poster accepted to *International Conference on Machine Learning* (ICML), Deep structured prediction workshop, 2017

[W5] Rose Yu, Paroma Varma, Dan Iter, Chris De Sa, Christopher Re, "Socratic Learning". Poster accepted to *Advances in Neural Information Processing Systems* (NIPS) future of interactive machine learning workshop, 2016

[W6] Rose Yu, Yaguang Li, Cyrus Shahabi, Ugur Demiryurek, Yan Liu. "Extreme Traffic Forecasting: A Deep Learning Approach." Poster accepted to *ACM SIGKDD Conference on Knowledge Discovery and Data Mining*(KDD) workshop on Mining and Learning from Time Series , 2016

[W7] Rose Yu, Yan Liu. "Simple and Efficient Tensor Regression for Spatio-Temporal Forecasting." Poster accepted to *International Workshop on Climate Informatics workshop*(CI), 2016

[W8] Rose Yu, Sanjay Purushotham, Yan Liu. "Efficent Spatio-Temporal Sampling via Tensor Sketching." Poster accepted to *Advances in Neural Information Processing Systems* (NIPS) time series workshop, 2015

[W9] Rose Yu, Dehua Cheng, Yan Liu. "Accelerated Online Low-Rank Tensor Learning for Multi-model Ensemble." Poster accepted to *International Workshop on Climate Informatics workshop* (CI), 2015

[W10] Mohammad Taha Bahadori, Rose Yu, Yan Liu. "Fast Cokriging via Low Rank Tensor Learning." Poster accepted to *International Workshop on Climate Informatics workshop* (CI), 2014

Rose Yu, Xinran He, Yan Liu. "Dynamic Social Network Group Anomaly Detection Using Hierarchical Bayesian Model." Poster accepted to *Women in Machine Learning* (WiML), 2013

Employment

IBM Thomas J. Watson Research Center, Yorktown Heights, New York, USA

Research Intern June 2015 - August 2015

Work with Hongfei Li, Anshul Sheopuri in Customer Analytic team on IBM Xtify push intelligence platform. Developed deep learning models for GPS data from Xtify to predict users' click behavior and build customer profiles.

Yahoo! Labs, Sunnyvale, California, USA

Research Intern June 2014 - August 2014

Work with Andrew Gelfand, Suju Rajan in Personalization team on Yahoo! Aviate location-aware

app recommendation. Developed a hierarchical Bayesian model for geographical segmentation problem in App usage. Continue academic collaboration through November on "Geographic Segmentation via Latent Poisson Factor Model".

Intel Lab, Santa Clara, California, USA

Research Intern May 2013 - August 2013

Work with Context-Aware Technology team of Intel Immersive Experience Research (IXR) division. Analyze smart phone usage data and propose a graphical model based algorithm to predict the potential contacts and applications on smart phones. Analyze NBC Universal movie data and fit regression models to predict future DVD/CD sales.

Microsoft R&D, Minghang, Shanghai, USA

Program Manager Intern June 2011 - June 2012

Work with Commerce team in Microsoft's Server & Tools Business. Build SDK Wiki for Commerce platform partners. Design API prototype for guest purchase without Window Live ID authentication feature. Adapt platform working flow of payment instruments risk check and fraud detection for Microsoft Office 360 and Azure.

Teaching

Special Topics in AI: Deep Learning (CS 7180) Fall 2018

Machine Learning (CS 6140) Fall 2018

Machine Learning (CSCI 567) Spring 2016

Guest lecturer : taught Gaussian mixture models and EM algorithm.

Advanced Big Data Analytics (CSCI 686) Fall 2015

Teaching assistant: Led weekly section; redesigned assignments and mini-project on topic modeling to reflect developments in big data analysis.

Invited Talk

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
8th International Workshop on 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
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
Department of Electrical & Computer Engineering, Northeastern University	Nov 12, 2015

Academic Service

Workshop Co-organizer

ICML Time Series Workshop, 2019
National Science Foundation (NSF), Panel Reviewer, 2018
KITP Conference: At the Crossroad of Physics and Machine Learning, 2018
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

Proceedings Chair, WSDM (2018)
Short Paper Chair, CIKM (2017)

Program Committee

ICML (2019, 2018), KDD (2019), ICLR (2019), AISTATS (2019), SDM (2019), NIPS (2018), 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)