

Qi (Rose) Yu

9500 Gilman Drive, Mail Code 0404
Department of Computer Science and Engineering
University of California, San Diego
La Jolla, CA 92093-0404

E-mail: roseyu@ucsd.edu
Office: CSE 3208
Phone: (858) 246-4724
Homepage: www.roseyu.com

RESEARCH	Spatiotemporal Machine Learning, Deep Learning, Tensor Methods, and their applications.	
CURRENT APPOINTMENT	University of California, San Diego , La Jolla, California <i>Assistant Professor, Department of Computer Science and Engineering, Halicoğlu Data Science Institute</i>	July 2020 - Present
PREVIOUS APPOINTMENT	Northeastern University , Boston, Massachusetts <i>Assistant Professor, Khoury College of Computer Sciences Network Science Institute, College of Engineering, Physics (By Courtesy)</i>	Aug 2018 - June 2020
	California Institute of Technology , Pasadena, California <i>Postdoctoral Scholar, Computing + Mathematical Sciences</i> <ul style="list-style-type: none">Advisors: Anima Anandkumar, Yisong Yue	Aug 2017 - Aug 2018
	Stanford University , Palo Alto, California <i>Visiting Researcher, Computer Science Department</i> <ul style="list-style-type: none">Host: Christopher Ré	Aug 2016 - Oct 2016
	IBM Research , Yorktown Heights, New York <i>Research Intern</i>	June 2015 - Aug 2015
	Yahoo! Labs , Sunnyvale, California <i>Research Intern</i>	June 2014 - Aug 2014
	Intel Lab , Santa Clara, California <i>Research Intern</i>	May 2013 - Aug 2013
	Microsoft R&D , Minghang, Shanghai <i>Program Manager Intern</i>	June 2011 - June 2012
EDUCATION	University of Southern California , Los Angeles, California <i>Ph.D., Computer Science, Computer Science Department</i> <i>Thesis: Tensor Learning for Large-Scale Spatiotemporal Analysis</i> <i>Finalist in William F. Ballhaus, Jr. Prize for Excellence in Graduate Engineering Research</i> <ul style="list-style-type: none">Advisors: Yan Liu, Cyrus Shahabi	Aug 2012 - Aug 2017
	Zhejiang University , Hangzhou, Zhejiang, PRC <i>B.S in Computer Science, Chu Kochen Honors College</i> <ul style="list-style-type: none">Advisor: Zhihua Zhang	Aug 2008 - June 2012
SELECTED AWARDS AND HONORS	Outstanding Faculty Researcher Award , JPMorgan, July 2021 Facebook Data Science Research Awards , Facebook Research, June 2021 Google Cloud Research Innovators , Google Cloud, March 2021 AWS Machine Learning Research Awards , Amazon Science, Feb 2021	

Best Paper Award, NeurIPS Machine Learning for Public Health, Dec 2020

Adobe Data Science Research Awards, Adobe Research, March 2020

Google Faculty Research Award, Google Research, Feb 2020

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

CONFERENCE
PUBLICATIONS

- [C1] Nima Dehmamy, Robin Walters, Yanchen Liu, Dashun Wang, Rose Yu. "Automatic Symmetry Discovery with Lie Algebra Convolutional Network" To Appear at *Advances in Neural Information Processing Systems* (NeurIPS), 2021
- [C2] Dongxia Wu, Liyao Gao, Xinyue Xiong, Matteo Chinazzi, Alessandro Vespignani, Yi-An Ma, Rose Yu. "Quantifying Uncertainty in Deep Spatiotemporal Forecasting" In Proceedings of *ACM SIGKDD Conference on Knowledge Discovery and Data Mining* (KDD), 2021
- [C3] Rui Wang, Danielle Maddix, Christos Faloutsos, Yuyang Wang, Rose Yu. "Bridging Physics-based and Data-driven modeling for Learning Dynamical Systems", In Proceeding of *Annual Conference on Learning for Dynamics and Control* (L4DC), 2021
- [C4] Steven Wong, Lejun Jiang, Robin Walters, Tamás G. Molnár, Gábor Orosz, Rose Yu. "Physics-Guided Deep Learning for Traffic Forecasting using Vehicle-to-Vehicle Communication" In Proceeding of *Annual Conference on Learning for Dynamics and Control* (L4DC), 2021
- [C5] Robin Walters, Jinxi (Leo) Li, Rose Yu. "Trajectory Prediction using Equivariant Continuous Convolution", In Proceeding of *International Conference on Learning Representations* (ICLR), 2021
- [C6] Rui Wang, Robin Walters, Rose Yu. "Incorporating Symmetry into Deep Dynamics Models for Improved Generalization", In Proceeding of *International Conference on Learning Representations* (ICLR), 2021
- [C7] Fan Xie, Alex Chowdhury, Clara De Paolis, Linfeng Zhao, Lawson Wong, Rose Yu. "Deep Imitation Learning for Bimanual Robotic Manipulation" In Proceeding of *Advances in Neural Information Processing Systems* (NeurIPS), 2020
- [C8] Armand Comas Massague, Chi Zhang, Zlatan Feric, Octavia Camps, Rose Yu. "Learning Disentangled Representations of Video with Missing Data" In Proceeding of *Advances in Neural Information Processing Systems* (NeurIPS), 2020
- [C9] Jung Yeon Park, Kenneth Theo Carr, Stephan Zheng, Yisong Yue, Rose Yu "Multiresolution Tensor Learning for Efficient and Interpretable Spatial Analysis" In Proceedings of *the 32th International Conference on Machine Learning* (ICML), 2020

- [C10] Chintan Shah, Nima Dehmamy, Nicola Perra, Matteo Chinazzi, Albert-Lszl Barabasi, Alessandro Vespignani, Rose Yu. "Finding Patient Zero: Learning Contagion Source with Graph Neural Networks" In *International Conference on Network Science* (NetSci), 2020.
- [C11] Csaba Both, Nima Dehmamy, Albert-Lszl Barabasi, Rose Yu. "Network Layout using Graph Neural Networks" In *International Conference on Network Science* (NetSci), 2020.
- [C12] Rui Wang, Adrian Albert, Karthik, Kashinath, Mustafa, Mustafa, Rose Yu. "Towards Physics-informed Deep Learning for Spatiotemporal Modeling of Turbulent Flows", In Proceeding of *ACM SIGKDD Conference on Knowledge Discovery and Data Mining* (KDD), 2020
- [C13] Eliza Huang, Rui Wang, Uma Chandrasekaran, Rose Yu. "Aortic Pressure Forecasting with Deep Sequence Learning", In Proceeding of *Computing in Cardiology* (CinC), 2020
- [C14] Nima Dehmamy, Albert-László Barabási, Rose Yu. "Understanding the Representation Power of Graph Neural Networks in Learning Graph Topology" In Proceeding of *Advances in Neural Information Processing Systems* (NeurIPS), 2019
- [C15] Yukai Liu, Rose Yu, Stephan Zheng, Eric Zhan, Yisong Yue. "NAOMI: Non-Autoregressive Multiresolution Sequence Imputation" In Proceeding of *Advances in Neural Information Processing Systems* (NeurIPS), 2019
- [C16] 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
- [C17] 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
- [C18] Rose Yu, Guangyu Li, Yan Liu. "Tensor regression meets Gaussian Processes." In Proceedings of *International Conference on Artificial Intelligence and Statistics* (AISTATS), 2018
- [C19] 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
- [C20] Rose Yu, Yan Liu. "Learning from Multiway Data: Simple and Efficient Tensor Regression." In Proceedings of *International Conference on Machine Learning* (ICML), 2016
- [C21] 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
- [C22] 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
- [C23] Rose Yu, Dehua Cheng, Yan Liu. "Accelerated Online Low Rank Tensor Learning for Multivariate Spatiotemporal Streams." In Proceedings of *International Conference on Machine Learning* (ICML), 2015
- [C24] 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**
- [C25] 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
- [C26] 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

JOURNAL
PUBLICATIONS

- [J1] K. Kashinath, M. Mustafa, A. Albert, J-L. Wu, C. Jiang, S. Esmailzadeh, K. Azizzadenesheli, R. Wang, A. Singh, A. Manepalli, D. Chirila, R. Yu, R. Walters, B. White, H. Xiao, H. A. Tchelepi, P. Marcus, A. Anandkumar, Prabhat. "Physics-informed machine learning: Case studies for weather and climate modelling" In *Journal of Philosophical Transactions of the Royal Society A*, 2020
- [J2] Rose Yu, Stephan Zheng, Anima Anandkumar, Yisong Yue. "Long Term Forecasting with Higher Order Tensor RNN". In *Journal of Machine Learning Research (JMLR)*, 2018
- [J3] Rose Yu, Yan Liu. "Spatio-Temporal Analysis of Social Media Data" In *Encyclopedia of GIS*, 2016
- [J4] Rose Yu, Huida Qiu, Zhen Wen, Ching-Yung Liu, Yan Liu. "A Survey on Social Media Analysis Anomaly Detection" In *ACM KDD Exploration*, 2016
- [J5] 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] Xingyu Su, Robin Walters, Denis Aslangil, Rose Yu. "Forecasting Variable-Density 3D Turbulent Flow. Poster Contact". In *ICLR Deep Learning for Simulation workshop, 2021*
- [W2] Rui Wang, Danielle Maddix, Christos Faloutsos, Yuyang Wang, Rose Yu. "Physics-based vs. Data-driven: A Benchmark Study on COVID-19 Forecasting", **Best Paper Award** in *Advances in Neural Information Processing Systems (NeurIPS)*, Machine Learning for Public Health workshop, 2020
- [W3] 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
- [W4] 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
- [W5] 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
- [W6] 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
- [W7] Rose Yu, Stephan Zheng. "Learning Chaotic Dynamics with Tensor RNN". In *International Conference on Machine Learning (ICML)*, Deep structured prediction workshop, 2017
- [W8] 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

ADVISING

Postdocs Supervised

- Robin Walters, 2020, active

Ph.D. Students Advised

- Bo Zhao, 2021, Active
- Sophia Sun, 2021, Active
- Dongxia (Allen) Wu, 2020, active
- Rui (Ray) Wang, 2019, active

- Jung Yeon (John) Park, 2019 - 2020, advised at Northeastern
- Clara De Paolis, 2018 -2020, advised at Northeastern

TEACHING

Deep Reinforcement Learning (CSE 291)	Fall 2021
Deep Learning (CSE 151B)	Spring 2021
Deep Generative Models (CSE 291(G00))	Fall 2020
Advanced Machine Learning (CS 7140)	Spring 2020
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 2019
Machine Learning (CS 6140)	Fall 2018

INVITED TALK

Year 2021	
NSF IAIFI AI Institute Colloquium,	Oct 2021
CMU AI in Physics seminar	Sep 2021
Georgia Tech Applied & Computational Math	Sep 2021
KDD Lecture Style Tutorial	August 2021
NASA Glenn Research Center	July 2021
One World MINDS Seminar	July 2021
RIKEN AIP Seminar, Japan	June 2021
Institute for Pure & Applied Mathematics (IPAM), UCLA	May 2021
AI Seminar, USC/ISI	May 2021
CRUNCH Applied Math Group, Brown University	April 2021
Featured Talk at NVIDIA GTC 2021	March 2021
Applied Math Department Colloquium, University of Arizona	Feb 2021
Duke University, Deep Learning Reading Group	Feb 2021
Oak Ridge National Laboratory Workshop on AI for Robust Engineering & Science	Jan 2021
Year 2020 Machine Learning in Science and Engineering virtual conference	Dec 2020
NeurIPS 2020 Workshop on Quantum Tensor Networks	Dec 2020

NeurIPS 2020 Workshop on AI for Earth	Dec 2020
NeurIPS 2020 Workshop on Interpretable Inductive Biases	Dec 2020
AGU Fall Meeting Invited Talks	Dec 2020
Caltech Climate Modeling Alliance (CliMA) group	Nov 2020
AAAI 2020 Symposium on Physics-Guided AI for Accelerating Scientific Discovery	Nov 2020
LA Life Science Summit	Oct 2020
COVID-19 Forecast Hub	Sep 2020
International School and Conference on Network Science	Sep 2020
ODSC Europe 2020 Virtual Conference	Sep 2020
Mathematics of Data Science Virtual Lecture Series, Tufts, MA	June 2020
Facebook Artificial Intelligence Research, Menlo Park, CA	April 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 2019
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 Probabilists 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 Mathematical 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 **Conference Organizing Committee**

Industry EXPO co-chair, ICML (2022)

Poster Chair, KDD (2020)

Proceedings Chair, ACM SIGSPATIAL (2020)

KITP: At the Crossroad of Physics and Machine Learning, 2019

Proceedings Chair, WSDM (2018)

Short Paper Chair, CIKM (2017)

Workshop Co-organizer

ICML Time Series Workshop, (2021, 2019, 2017)

ICCV Simulation Technology for Embodied AI, 2021

ICLR Workshop on Deep Learning for Simulation (2021)

NeurIPS Workshop on Machine Learning for Engineering (2020)

NIPS Woman in Machine Learning Workshop (2016)

NIPS workshop on Learning with Tensors: Why Now and How? (2016)

Senior Program Committee (or Area Chair)

ICML(2021, 2020), NeurIPS (2021, 2020), ICLR (2022, 2021), AAAI (2021), IJCAI (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)

Grant Reviewer/Panelist

Climate Change AI Innovation Grants (2021)
Department of Energy (DOE) Review Panel (2020, 2019)
National Science Foundation (NSF) Review Panel (2021, 2019, 2018)

Reviewer

AAAI 2021 Spring Symposium on Combining Machine Learning with Physical Sciences, Proceedings of IEEE (2019), 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)