Yao Ming

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Education

Aug 2016 - Dec 2019 **Ph.D. in Computer Science**
Hong Kong University of Science and Technology, Hong Kong
- Supervisor: Prof. Huamin Qu
- Thesis: Visualization for Explainable Machine Learning.
- Cumulative Grade Average (CGA): 4.188/4.3

Aug 2012 - Jul 2016 **B.S. in Civil Engineering, B.S. in Economics**
Tsinghua University, Beijing, China
- Ranking: 1st of 93 students; Overall GPA: 93/100.

Research / Work Experience

Jun 2019 - Sep 2019 **Alibaba Damo Academy**, Hangzhou, China
Research Intern (advised by Dr. Hongxia Yang)
- Developed **interpretable user-commodity embedding algorithms** for large-scale recommendation systems with Tensorflow, SQL (Hive).

Jul 2018 - Dec 2018 **Robert Bosch LLC**, Sunnyvale, CA
Research Intern (advised by Dr. Panpan Xu), Human Machine Interaction Group
- Developed **interpretable sequence learning** algorithm, ProSeNet (with PyTorch and Tensorflow), which provides interpretability while retaining the state-of-the-art performance.
- Designed, developed, and deployed a web-based visual analytics system using React and Flask for understanding and steering ProSeNet. The system supports online fine-tuning and rich user interactions.

Jan 2018 - Jun 2018 **New York University**, NY
Research Intern (advised by Prof. Enrico Bertini), VIDA Lab
- Developed a **model-agnostic** algorithm (in C and Python) that learns **surrogate rule lists** for explaining any classification models for *non-experts*. The algorithm achieves a fidelity of ~90% on different datasets.
- Designed and built rule-based explanatory visual interfaces, **RuleMatrix**, for understanding and analyzing machine learning models using Python (Keras and Scikit-Learn) and Javascript (React and D3).

Aug 2016 - Present **HKUST-WeChat Joint Lab on AI Technology**, Hong Kong
Lab Member

Project RNNVis (published on **IEEE VIS' 17'** | **Yelp Data Challenge Grand Prize Winner**)
- Designed and implemented a web-based interface for understanding, exploring, and comparing the hidden memories of RNNs using Tensorflow, Flask, MongoDB, and Javascript (Vue.js, D3.js).

Project ATMSeer (published on **ACM CHI' 18**)
- Participated as a major developer in ATMSeer, a user-centered auto-machine learning system, a joint project collaborated with the Data to AI Lab from MIT.

Publications

ProtoSteer: Steering Deep Sequence Model with Prototypes

Yao Ming, Panpan Xu, Furui Cheng, Huamin Qu, Liu Ren.

IEEE Transactions on Visualization and Computer Graphics, 2019.

Interpretable and Steerable Sequence Learning via Prototypes

Yao Ming, Panpan Xu, Huamin Qu, Liu Ren.

Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining, 2019.

[Accepted for **Oral Presentation**, 9% Acceptance Rate]

ATMSeer: Increasing Transparency and Controllability in Automated Machine Learning

Qianwen Wang, **Yao Ming**, Zhihua Jin, Qiaomu Shen, Dongyu Liu, Micah J. Smith, Kalyan Veeramachaneni, Huamin Qu.

Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, 2019.

[24% Acceptance Rate]

Learning Vis Tools: Teaching Data Visualization Tutorials

Leo Yu-Ho Lo, **Yao Ming**, Huamin Qu.

IEEE Visualization Conference, 2019.

[**Best Short Paper Honorable Mention**]

RuleMatrix: Visualizing and Understanding Classifiers using Rules

Yao Ming, Huamin Qu, Enrico Bertini.

IEEE Transactions on Visualization and Computer Graphics, 2018.

[23% Acceptance Rate]

Understanding Hidden Memories of Recurrent Neural Networks

Yao Ming, Shaozu Cao, Ruixiang Zhang, Zhen Li, Yuanzhe Chen, Yangqiu Song, Huamin Qu.

IEEE Visualization Conference (VAST), 2017.

[**Yelp Data Challenge Grand Prize Winner** | 24% Acceptance Rate]

A Visual Analytics Approach for Understanding Egocentric Intimacy Network Evolution and Impact Propagation in MMORPGs

Quan Li, Qiaomu Shen, **Yao Ming**, Peng Xu, Yun Wang, Xiaojuan Ma, Huamin Qu.

Proceedings of IEEE Pacific Visualization Symposium, 2017.

Software

RuleMatrix — A general rule-based machine learning model explanation tool featured with an interactive visualization interface in Jupyter Notebook. https://github.com/rulematrix/rule-matrix-py

PySBRL — A C implementation of the Scalable Bayesian Rule List algorithm (supporting multi-class classification) with a python wrapper. https://github.com/myaooo/pysbrl

RNNVis — A web-based app for explaining the hidden states of RNN models in Tensorflow. https://github.com/myaooo/rnnvis

Honors and Awards

2019 Best Short Paper Honorable Mention of IEEE VIS 2019
For "Learning Vis Tools: Teaching Data Visualization Tutorials"

2019 SENG Academic Award for PhD Students

2019 KDD Student Travel Award

2018 **Yelp Dataset Challenge Round 10 Grand Prize Award**
For "Understanding Hiddem Memories of Recurrent Neural Networks"

2016 - 2020 **Hong Kong PhD Fellowship (HKPF)**
250 Fellowships awarded in all 8 Universities in Hong Kong each year .

2016 **Outstanding Graduate of Beijing**
Awarded to graduates with outstanding academic performance of the universities at Beijing

2015 Nomination of **Tsinghua Top Talent Scholarship**
Considered to be the most prestigious prize for outstanding students at Tsinghua.
Around **50** students nominated from **3000+** students each year.

2015 National Endeavor Scholarship
Awarded to students with **top 2%** academic performance each year.

2015 Second Prize in the 1st National Geotechnical Engineering Contest

2015 Honorable Mention in 2015 MCM/ICM

2014 **National Scholarship**
Awarded to students with **top 2%** academic performance each year.

Invited Talks

Oct 2019 ProtoSteer: Steering Deep Sequence Model with Prototypes
IEEE VIS Conference, Vancouver, Canada.

Aug 2019 Interpretable and Steerable Sequence Learning via Prototypes
ACM KDD Conference, Anchorage, AK, U.S..

Oct 2018 Explainable Machine Learning via Surrogate Rules
Bay Area Visual Analytics Symposium, Sunnyvale, CA, U.S..

Oct 2018 RuleMatrix: Visualizing and Understanding Classifiers with Rules
IEEE VIS Conference, Berlin, Germany.

Nov 2017 A Survey on Visualization for Explainable Classifiers
MSBD5005 Guest Lecture, HKUST, Hong Kong.

Oct 2017 Understanding Hidden Memories of Recurrent Neural Network
IEEE VIS Conference, Phoenix, AZ, U.S..

Services

Reviewer of
ACM Conference on Human Factors in Computing Systems (CHI), 2019, 2020
IEEE Transactions on Visualization and Computer Graphics (TVCG), 2018, 2019
IEEE VIS (VAST, InfoVis, and SciVis) Conference, 2018, 2019
IEEE Eurographics/VGTC Conference on Visualization (EuroVis), 2019, 2020
IEEE Pacific Visualization Symposium (PacificVis), 2020
IEEE Computer Graphics and Applications (CG&A) Magazine, 2018
ACM Transactions on Interactive Intelligent Systems (TiiS), 2019
China Vis, 2019

Skills

Programming Proficient in Python, C++, and JavaScript/Typescript
Familiar with MATLAB and Java

ML Tools PyTorch, TensorFlow, Keras, Scikit-Learn

Web Dev Flask, MongoDB, SQL, React, Node.js, Vue.js, D3.js

Last updated on: January 23, 2020