

**Quanming, YAO (姚权铭)**  
**Assistant Professor, Department of Electronic Engineering, Tsinghua University**  
qyaoaa@tsinghua.edu.cn / qyaoaa@connect.ust.hk

## ★ Statement Highlighting

World-class expert in machine learning, develop automated learning techniques achieving AI For Everyone

- Receive Global Top-50 Chinese New Stars, Forbes 30 Under 30, National Youth Talent Plan and Google Fellowship
- Serve as area chairs for ICML, NeurIPS and ICLR, with h-index 29 and 5800+ citations
- Develop automated graph learning methods, which hold 1st place in Open Graph Benchmark (ImageNet in Graph Learning)
- Design well-known "Co-teaching" algorithm, which is top 10 cited in NeurIPS 2018
- Develop Codabench platform, which facilitates benchmarking and guarantees reproducibility

## 🎓 Education Experience

**Ph.D. - Department of Computer Science and Engineering (CSE) -** Sep. 2013 - Jun. 2018  
**Hong Kong University of Science and Technology (HKUST)**

- Thesis: Machine Learning with a Low-Rank Regularization. Supervisor: Prof. James Kwok.

**Bachelor - Department of Electronic and Information Engineering (EIE) -** Sep. 2009 - Jun. 2013  
**HuaZhong University of Science and Technology (HUST)**

- A member of national experimental "SeedClass". GPA 3.8/4.0. Ranking: 1/20.
- Thesis: Large-Scale Image Classification. Supervisor: Prof. Xiang Bai.

## 💼 Work Experience

**Tenure-track Assistant Professor & Ph.D. Advisor -** Department of Electronic Jun. 2021 - Present  
Engineering, Tsinghua University, China

- Department of Electronic Engineering, Tsinghua University, China

**Senior Scientist / Founding Leader of Machine Learning Research Team -** Jun. 2019 - May. 2021  
4Paradigm, Hong Kong SAR, China

**Researcher -** 4Paradigm, Beijing, China Jun. 2018 - May. 2019

## 🔍 Research Focus

**Machine Learning:** Automated machine learning, Meta learning, Knowledge graph, Graph neural networks

- Goal: develop simple and intuitive methods, achieve "AI For Everyone"

## 🏆 Awards

**Global Top Chinese New Stars in Machine Learning** 2022

- Top 50 Chinese machine learning young researchers in worldwide.

**Hurun China Under 30s To Watch** 2021

- Entrepreneurial leaders under the age of 30 in China.

**Outstanding reviewer of ICCV** 2021

- Top 5% reviewer of International Conference on Computer Vision (ICCV).

**National Young Talents Project** 2020

- Highest national recognition for excellence youth working in science and engineering (by China innovation funding).

**Young Scientist Awards (1st runner up)** 2020

- Highest honor for young researchers working in Hong Kong area (issued by Hong Kong Institution of Science).

**Forbes 30 Under 30 (Science & Healthcare Category, China)** 2020

- Forbes elects 300 young entrepreneurs and change makers to the 30 Under 30 List annually in the 10 industries.

**Wuwen Jun (吴文俊) Prize for Excellence Youth in Artificial Intelligence** 2019

- Hosted by Chinese Association for Artificial Intelligence (CAAI) and 14 young researchers in China are awarded.

**Ph.D Research Excellence Awards (1st runner up)** 2018

- 3 student in Engineering School (including 6 departments) of HKUST are selected.

<b>Google Ph.D Fellowship in Machine Learning</b>	2016
■ 13 students are awarded in the worldwide, and I was awarded due to my contributions in low-rank optimization.	
<b>Tse Cheuk Ng Tai Research Excellence Prize</b>	2015
■ 1 student in CSE department of HKUST is selected.	
<b>Excellent Bachelor Thesis</b>	2014
■ First prize in the level of both HUST and HuBei Province.	
<b>Qiming Star (Invention Star)</b>	2012
■ Highest honor in HUST and 5 among 40000 are awarded.	
<b>National Scholarship</b>	2012
■ 3 students in EIE department of HUST are selected.	

## Journal Publications

### **Efficient Low-rank Tensor Learning with Nonconvex Regularization**

- Journal of Machine Learning Research (**JMLR**), 2022.
- **Quanming Yao\***, Yaqing Wang, Bo Han, James Kwok.

### **Bilinear Scoring Function Search for Knowledge Graph Learning**

- IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2022.
- Yongqi Zhang, **Quanming Yao\***, James Kwok.

### **Codabench: Flexible, Easy-to-use and Reproducible Meta-benchmark Platform**

- **Patterns** (Cell Press). 2022
- Zhen Xu, Sergio Escalera, Isabelle Guyon, Adrien Pavao, Magali Richard, Wei-Wei Tu, **Quanming Yao**, Huan Zhao.

### **Efficient Low-Rank Semidefinite Programming with Robust Loss Functions**

- IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2021.
- **Quanming Yao\***, Hansi Yang, En-Liang Hu, James Kwok.

### **Guest Editorial: Automated Machine Learning**

- IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2021.
- Hugo Jair Escalante, **Quanming Yao**, Wei-Wei Tu, Nelishia Pillay, Rong Qu, Yang Yu, Neil Houlsby.

### **Side Information Fusion for Recommender Systems over Heterogeneous Information Network**

- ACM Transactions on Knowledge Discovery from Data (**TKDD**), 2021.
- Huan Zhao, **Quanming Yao\***, Yangqiu Song, James Kwok, Dik Lee.

### **Simple and Automated Negative Sampling for Knowledge Graph Embedding**

- The International Journal on Very Large Data Bases (**VLDBJ**), 2021.
- Yongqi Zhang, **Quanming Yao\***, Lei Chen.

### **Enhanced Bayesian Factorization with Variant Scale Partitioning for Multivariate Time Series Analysis**

- IEEE Transactions on Knowledge and Data Engineering (**TKDE**), 2021.
- Yunbo Tang, Dan Chen, Yiping Zuo, Xiaoqiang Lu, Rajiv Ranjan, Albert Y. Zomaya, **Quanming Yao**, Xiaoli Li.

### **Multi-scale Dilated Convolutional Network for Knowledge Graph Embedding**

- SCIENTIA SINICA: Informationis (in Chinese), 2021.
- H. Du, Z. Wang, H. Nie, **Quanming Yao**, X. Li.

### **WRTRe: Weighted Relative Position Transformer for Joint Entity and Relation Extraction**

- Neurocomputing, 2021.
- Wei Zheng, Zhen Wang, **Quanming Yao**, and Xuelong Li.

### **Non-local Meets Global: An Integrated Paradigm for Hyperspectral Restoration**

- IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2020.
- Wei He, **Quanming Yao\***, Chao Li, Naoto Yokoya, Qibin Zhao, Hongyan Zhang, Liangpei Zhang.

### **Generalizing from a Few Examples: A Survey on Few-Shot Learning**

- ACM Computing Surveys (**CSUR**), 2020.
- Yaqing Wang, **Quanming Yao\***, James T. Kwok, Lionel Ni.
- 1/134 in CSUR 2020, 14/546 in CSUR 2016-2020 --- The most cited survey in CSUR from 2020 --- ESI highly cited

### Large-Scale Low-Rank Matrix Learning with Nonconvex Regularizers

- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2019.
- **Quanming Yao**, James T. Kwok, Taifeng Wang, Tie-Yan Liu.

### Efficient Learning with Nonconvex Regularizers by Nonconvexity Redistribution

- Journal of Machine Learning Research (JMLR), 2018.
- **Quanming Yao**, James T. Kwok.

### Accelerated and Inexact Soft-Impute for Large-Scale Matrix and Tensor Completion

- IEEE Transactions on Knowledge and Data Engineering (TKDE), 2018.
- **Quanming Yao**, James T. Kwok.

### Millionaire: A Hint-guided Approach for Crowdsourcing

- Machine Learning (MLJ), 2018.
- Bo Han, **Quanming Yao**, Yuangang Pan, Ivor W. Tsang, Xiaokui Xiao, Qiang Yang, Masashi Sugiyama. (underline: equal contributions).

### Scalable Online Convolutional Sparse Coding

- IEEE Transactions on Image Processing (TIP), 2018
- Yaqing Wang, **Quanming Yao**, James T. Kwok, Lionel Ni

### VISTopic: A Visual Analytics System for Making Sense of Large Document Collections using Hierarchical Topic Modeling

- Journal of Visual Informatics, 2017.
- Yang Yi, **Quanming Yao**, Huamin Qu.

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## Conference Publications

### Bridging the Gap of AutoGraph between Academia and Industry: Analysing AutoGraph Challenge at KDD Cup 2020

- Frontiers in Artificial Intelligence, 2022.
- Zhen Xu, Lanning Wei, Huan Zhao, Rex Ying, **Quanming Yao**, Wei-Wei Tu, Isabelle Guyon.

### Fast and Provable Nonconvex Tensor RPCA

- International Conference on Machine Learning (ICML), 2022.
- Haiquan Qiu, Yao Wang, Shaojie Tang, Deyu Meng, **Quanming Yao\***.

### KGtuner: Efficient Hyper-parameter Search for Knowledge Graph Learning

- Annual Meeting of the Association for Computational Linguistics (ACL), 2022.
- Yongqi Zhang, Zhanke Zhou, **Quanming Yao\***, Yong Li.

### Knowledge Graph Reasoning with Relational Digraph

- The Web Conference (WebConf), 2022.
- Yongqi Zhang, **Quanming Yao\***.

### DisenHCN: Disentangled Hypergraph Convolutional Networks for Spatiotemporal Activity Prediction

- International Conference on Data Engineering (ICDE), 2022.
- Y. Li, C. Gao, **Quanming Yao**, T. Li, D. Jin, Y. Li.

### Property-Aware Relation Networks for Few-Shot Molecular Property Prediction

- Annual Conference on Neural Information Processing Systems (NeurIPS), 2021.
- Yaqing Wang, Abulikemu Abuduweili, **Quanming Yao\***, Dejing Dou (star: corresponding author).

### Progressive Feature Interaction Search for Deep Sparse Network

- Annual Conference on Neural Information Processing Systems (NeurIPS), 2021.
- Chen Gao, Yingfeng Li, **Quanming Yao**, Depeng Jin, Yong Li.

### Automorphic Equivalence-aware Graph Neural Network

- Annual Conference on Neural Information Processing Systems (NeurIPS), 2021.
- Fengli Xu, **Quanming Yao**, Pan Hui, Yong Li.

### Hierarchical Heterogeneous Graph Representation Learning for Short Text Classification

- Conference on Empirical Methods in Natural Language Processing (EMNLP), 2021.
- Yaqing Wang, Song Wang, **Quanming Yao\***, Dejing Dou.

### Pooling Architecture Search for Graph Classification

- ACM International Conference on Information and Knowledge Management (CIKM), 2021.

- Lanning Wei, Huan Zhao, **Quanming Yao**, Zhiqiang He.

#### **DiffMG: Differentiable Meta Graph Search for Heterogeneous Graph Neural Networks**

- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**), 2021.
- Yuhui Ding, **Quanming Yao\***, Huan Zhao, Tong Zhang.

#### **Efficient Data-specific Model Search for Collaborative Filtering**

- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**), 2021.
- Chen Gao, **Quanming Yao**, Yong Li, Depeng Jin. (underline: equal contributions)

#### **A Scalable, Adaptive and Sound Nonconvex Regularizer for Low-rank Matrix Learning**

- The Web Conference (**WebConf**), 2021.
- Yaqing Wang, **Quanming Yao**, James Kwok.

#### **Searching to Sparsify Tensor Decomposition for N-ary Relational Data**

- The Web Conference (**WebConf**), 2021.
- Shimin Di, **Quanming Yao**, Lei Chen.

#### **Role-Aware Modeling for N-ary Relational Knowledge Bases**

- The Web Conference (**WebConf**), 2021.
- Yu Liu, **Quanming Yao**, Yong Li.

#### **Search to Aggregate Neighborhood for Graph Neural Network**

- International Conference on Data Engineering (**ICDE**), 2021.
- Huan Zhao, **Quanming Yao\***, Weiwei Tu.

#### **Efficient Relation-aware Scoring Function Search for Knowledge Graph Embedding**

- International Conference on Data Engineering (**ICDE**), 2021.
- Shimin Di, **Quanming Yao\***, Yongqi Zhang, Lei Chen.

#### **Searching Recurrent Architecture for Path-based Knowledge Graph Embedding**

- Annual Conference on Neural Information Processing Systems (**NeurIPS**), 2020.
- Yongqi Zhang, **Quanming Yao\***, Lei Chen.

#### **Simplify and Robustify Negative Sampling for Implicit Collaborative Filtering**

- Annual Conference on Neural Information Processing Systems (**NeurIPS**), 2020.
- Jingtao Ding, Yunhan Quan, **Quanming Yao**, Yong Li, Depeng Jin.

#### **Searching to Exploit Memorization Effect in Learning from Noisy Labels**

- International Conference on Machine Learning (**ICML**), 2020.
- **Quanming Yao**, Hansi Yang, Bo Han, Gang Niu, James Kwok.

#### **SIGUA: Forgetting May Make Learning with Noisy Labels More Robust**

- International Conference on Machine Learning (**ICML**), 2020.
- Bo Han, Gang Niu, Xingrui Yu, **Quanming Yao**, Miao Xu, Ivor Tsang, Masashi Sugiyama.

#### **AutoSTR: Efficient Backbone Search for Scene Text Recognition**

- European Conference on Computer Vision (**ECCV**), 2020.
- Hui Zhang, **Quanming Yao\***, Mingkun Yang, Yongchao Xu, Xiang Bai\*.

#### **Efficient Neural Interaction Functions Search for Collaborative Filtering**

- International World Wide Web Conferences (**WWW**), 2020.
- **Quanming Yao**, Xiangning Chen, James T. Kwok, Yong Li, Cho-Jui Hsieh. (underline: equal contributions)

#### **Generalizing Tensor Decomposition for N-ary Relational Knowledge Bases**

- International World Wide Web Conferences (**WWW**), 2020.
- Yu Liu, **Quanming Yao**, Yong Li.

#### **AutoSF: Searching Scoring Functions for Knowledge Graph Embedding**

- IEEE International Conference on Data Engineering. (**ICDE**), 2020.
- Yongqi Zhang, **Quanming Yao\***, Wenyuan Dai, Lei Chen.

#### **Predicting Origin-Destination Flow via Multi-Perspective Graph Convolutional Network**

- IEEE International Conference on Data Engineering. (**ICDE**), 2020.
- Hongzhi Shi, **Quanming Yao**, Qi Guo, Yaguang Li, Lingyu Zhang, Jieping Ye, Yong Li, Yan Liu.

#### **Efficient Neural Architecture Search via Proximal Iterations**

- AAAI Conference on Artificial Intelligence (**AAAI**), 2020.
- Quanming Yao, Ju Xu, Wei-Wei Tu, Zhanxing Zhu.

#### **Robust Learning from Noisy Side-information by Semi-definite Programming**

- International Joint Conference on Artificial Intelligence (**IJCAI**), 2019.
- En-Liang Hu, **Quanming Yao**\*

#### **Differential Private Stack Generalization with an Application to Diabetes Prediction**

- International Joint Conference on Artificial Intelligence (**IJCAI**), 2019.
- **Quanming Yao**, Xiawei Guo, James Kwok, Wei-Wei Tu, Yuqiang Chen, Wenyuan Dai, Qiang Yang.

#### **State-Sharing Sparse Hidden Markov Models for Personalized Sequences**

- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**), 2019.
- Hongzhi Shi, Chao Zhang, **Quanming Yao**\*, Yong Li\*, Funing Sun, Dengpeng Jin.

#### **AutoCross: Automatic Feature Crossing for Tabular Data in Real-World Applications**

- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**), 2019.
- Yuanfei Luo, Mengshuo Wang, Hao Zhou, **Quanming Yao**\*, Wei-Wei Tu\*, Yuqiang Chen, Qiang Yang.

#### **Efficient Nonconvex Regularized Tensor Completion with Structure-aware Proximal Iterations**

- International Conference on Machine Learning (**ICML**), 2019.
- **Quanming Yao**, James T. Kwok, Bo Han.

#### **Non-local Meets Global: An Integrated Paradigm for Hyperspectral Denoising**

- IEEE Conference on Computer Vision and Pattern Recognition (**CVPR(oral)**). 2019.
- Wei He, **Quanming Yao**\*, Chao Li, Naoto Yokoya, Qibin Zhao.

#### **NSCaching: Simple and Efficient Negative Sampling for Knowledge Graph Embedding**

- IEEE International Conference on Data Engineering (**ICDE**). 2019.
- Yongqi Zhang, **Quanming Yao**\*, Yingxia Shao, Lei Chen.
- Top-1% cited paper in ICDE 2019

#### **Scalable Robust Matrix Factorization with Nonconvex Loss**

- Advance in Neural Information Processing Systems (**NeurIPS**), 2018
- **Quanming Yao**, James T. Kwok

#### **Co-teaching: Robust Training Deep Neural Networks with Extremely Noisy Labels**

- Advance in Neural Information Processing Systems (**NeurIPS**), 2018
- Bo Han, Quanming Yao, Xingru Yu, Gang Niu, Miao Xu, Weihua. Hu, Ivor W. Tsang, Masashi Sugiyama. (underline: equal contributions)
- Top-1% cited paper in NeurIPS 2018

#### **Online Convolutional Sparse Coding with Sample-Dependent Dictionary**

- International Conference on Machine Learning (**ICML**), 2018
- Yaqing Wang, **Quanming Yao**, James T. Kwok, Lionel Ni

#### **Efficient Inexact Proximal Gradient Algorithm for Nonconvex Problems**

- International Joint Conference on Artificial Intelligence (**IJCAI**), 2017
- **Quanming Yao**, James T. Kwok. Fei Gao, Wei Chen, Tie-Yan Liu

#### **Collaborative Filtering with Social Local Models**

- IEEE International Conference on Data Mining (**ICDM**), 2017
- Huan Zhao, **Quanming Yao**, James Kwok, Dik Lun Lee.

#### **Meta-Graph Based Recommendation Fusion over Heterogeneous Information Networks**

- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**), 2017
- Huan Zhao, **Quanming Yao**, Jianda Li, Yangqiu Song, Dik Lun Lee

#### **Loss-aware Binarization of Deep Networks**

- International Conference on Learning Representations (**ICLR**), 2017
- Lu Hou, **Quanming Yao**, James Kwok

#### **Loss-aware Binarization of Deep Networks**

- International Conference on Learning Representations (**ICLR**), 2017
- Lu Hou, **Quanming Yao**, James Kwok.

#### **Zero-Shot Learning with a Partial Set of Observed Attributes**

- International Joint Conference on Neural Networks, 2017
- Yaqing Wang, James Kwok, **Quanming Yao**, Lionel Ni

#### **Efficient Sparse Low-Rank Tensor Completion using Frank-Wolfe Algorithm**

- AAAI Conference on Artificial Intelligence (**AAAI**), 2017
- Xiawei Guo, **Quanming Yao**, James Kwok

#### **Efficient Learning with a Family of Nonconvex Regularizers by Redistributing Nonconvexity**

- International Conference on Machine Learning (**ICML**), 2016
- **Quanming Yao**, James Kwok

#### **Greedy Learning of Generalized Low-Rank Models**

- International Joint Conference on Artificial Intelligence (**IJCAI**), 2016
- **Quanming Yao**, James Kwok

#### **Fast Low-Rank Matrix Learning with Nonconvex Regularization**

- IEEE International Conference on Data Mining (**ICDM**), 2015
- **Quanming Yao**, James Kwok, Wenliang Zhong

#### **Accelerated Inexact Soft-Impute for Fast Large-Scale Matrix Completion**

- International Joint Conference on Artificial Intelligence (**IJCAI**), 2015
- **Quanming Yao**, James Kwok

#### **Colorization by Patch-Based Local Low-Rank Matrix Completion**

- AAAI Conference on Artificial Intelligence (**AAAI**), 2015
- **Quanming Yao**, James Kwok

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## Academic Service

### **Associate Editor (journal)**

- 2021: Neural Network Journal

### **Guest Editor (journal)**

- 2021: Machine Learning Journal: WSL Special Issue
- 2019: TPAMI-AutoML Special Issue

### **Reviewer (journal)**

- 2021: IEEE TPAMI, IEEE TNNLS, IEEE TKDE, JMLR, MLJ, IJCV
- 2020: IEEE TPAMI, IEEE TNNLS, IEEE TYCB, IEEE TKDE
- 2019: Linear and Multilinear Algebra, IEEE TNNLS, ACM Computing Surveys
- 2018: MLJ, IEEE TIP, IEEE TNNLS, Neurocomputing
- 2017: IEEE TNNLS, IEEE TIP, Neurocomputing
- 2016: IEEE J-BHI, IEEE/ACM ToN

### **Area Chair (conference)**

- 2022: ICML
- 2021: IJCAI, ICLR, ACML

### **Senior Program Committee (conference)**

- 2021: AAAI
- 2020: IJCAI, AAAI

### **Program Committee (conference)**

- 2019: ICML, AAAI, IJCAI, NeurIPS
- 2018: ICLR, ICML, NeurIPS, AAAI, IJCAI, CVPR
- 2017: NeurIPS, ICML, AAAI
- 2016: NeurIPS, AAAI

### **Workshop Organizer (conference)**

- 2020: Weakly-supervised and Unsupervised Learning Workshop@SDM, Weakly-supervised Representation Learning Workshop@ACML
- 2019: Weakly-supervised Learning Workshop@ACML

### **Workshop Technical Committee (conference)**

- 2020: EARTHVISION@CVPR

- 2019: FML@IJCAI, EARTHVISION@CVPR

#### **Tutorial Organizer/Speaker**

- 2020: AutoML for Recsys@KDD

#### **Competition Organizer**

- 2019: The 3rd plus AutoML Challenge@IJCNN, AutoWSL@ACML
- 2018: The 3rd AutoML Challenge@NeurIPS