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[Research Interest](#) | [Education and Intern](#) | [Publications](#) | [Projects](#) | [Awards](#) | [Activities and Volunteering](#)

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[\[CV_YYang.pdf\]](#) [\[Google Scholar\]](#) [\[GitHub\]](#) [\[LinkdeIn\]](#) [\[CSDN\]](#) [\[Wechat\]](#)

Research Interest

I work in the field of intelligent sensing systems, time-series, industrial signal processing, optical fiber, multi-sensor fusion, sensors-based data mining, AI-based IoT, machine learning and deep learning theory. Currently, I focus on the following research topics:

- AI and distributed optical fiber based long-distance pipeline safety early warning system
- Spatio-temporal signal processing and identification
- Workload I/O prediction, feature extraction and data prefetching in storage systems
- Time-series forecasting
- Semi-supervised signal processing and signal denoising
- Feature and model fusion

Education and Intern

- 2019.9-NOW M.E. in [Department of Automation, Tsinghua University](#). GPA 3.98/4.0, Rank 1/65
- 2021.2-2021.8 AI Research Intern in Decision Making & Reasoning Lab, [Huawei Noah'S Ark Lab](#).
- 2019.1-2019.2 Exchange student in Artificial intelligence field, [University of Cambridge](#).
- 2015.9-2019.6 B.E. in [School of Artificial Intelligence and Automation, Huazhong University of Science and Technology, HUST](#). (Experimental Class on Innovation at the Crossroads of Automation and Science) GPA 90.45/100 (3.91/4.0), Rank 10/300

Publications

Journals:

- [3] **Y. Yang**, H. Zhang, Y. Li, "Pipeline Safety Early Warning by Multi-feature-fusion CNN and LightGBM Analysis of Signals from Distributed Optical Fiber Sensors," *IEEE Transactions on Instrumentation and Measurement (TIM)*, 2021. (**Q1, IF=4.016**) [\[Link\]](#) [\[PDF\]](#) [\[BibTeX\]](#)
- [2] **Y. Yang**, H. Zhang, Y. Li, "Long-Distance Pipeline Safety Early Warning: A Distributed Optical Fiber Sensing Semi-Supervised Learning Method," *IEEE Sensors Journal (IEEE Sensors J)*, 2021. (**Q2, IF=3.301**) [\[Link\]](#) [\[PDF\]](#) [\[BibTeX\]](#)
- [1] Z.Xu, F. Wu, **Y. Yang**, Y. Li, "ECT Attention Reverse Mapping algorithm: visualization of flow pattern heatmap based on convolutional neural network and its impact on ECT image reconstruction," *Measurement Science and Technology (MST)*, vol. 32, no. 3, pp. 035403, 2020. (**Q2, IF=2.046**) [\[Link\]](#) [\[PDF\]](#) [\[BibTeX\]](#)

Conferences:

- [4] X.Li, Q.Shi, G.Hu, L.Chen, H.Mao, **Y. Yang**, M.Yuan, J.Zeng and Z.Cheng, "Block Access Pattern Discovery via Compressed Full Tensor Transformer," *30th ACM International Conference on Information and Knowledge Management (CIKM 2021)*, 2021. (**CCF-B**)
- [3] **Y. Yang**, Y. Li, H. Zhang, "Pipeline Safety Early Warning Method for Distributed Signal using Bilinear CNN and LightGBM," *Proceeding of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2021)*, 2021. (**CCF-B**) [\[Link\]](#) [\[PDF\]](#) [\[BibTeX\]](#) [\[Poster\]](#) [\[Slides\]](#) [\[Video\]](#) [\[Picture_oral\]](#)
- [2] **Y. Yang**, Y. Li, T. Zhang, Y. Zhou, and H. Zhang, "Early Safety Warnings for Long-Distance Pipelines: A Distributed Optical Fiber Sensor Machine Learning Approach," *Proceeding of the Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI 2021)*, 35(17), 14991-14999, 2020. (**CCF-A**) [\[Link\]](#) [\[PDF\]](#) [\[BibTeX\]](#) [\[Poster\]](#) [\[Slides\]](#) [\[Video\]](#) [\[Picture_oral\]](#)
- [1] H. Zhang, **Y. Yang**, M. Yang, L. Min, Y. Li, X. Zheng, "A Novel CNN Modeling Algorithm for the Instantaneous Flow Rate Measurement of Gas-liquid Multiphase Flow," *Proceedings of the 2020 12th International Conference on Machine Learning and Computing (ICMLC 2020)*, pp. 182-187, 2020. [\[Link\]](#) [\[PDF\]](#) [\[BibTeX\]](#)

Workshops, Posters and Others:

- [3] **Y. Yang**, Y. Li and H. Zhang, "Long-Distance Pipeline Safety Early Warning: A Distributed Optical Fiber Sensor Deep Learning Approach," *2021 IEEE the 6th Optoelectronics Global Conference (OGC 2021)*, 2021. (**Abstract & Presentation**) [\[PDF\]](#) [\[Picture_oral\]](#) [\[Slide\]](#)
- [2] **Y. Yang**, "Long-distance Oil and Gas Transportation Pipeline Safety Early Warning System Based on Deep Learning Approach," *The XVII International Forum-Contest of Students and Young Researchers Topical Issues of Rational Use of Natural Resources*, in Saint Petersburg, Russia, 2021. (**Oral & First prize**) [\[Link\]](#) [\[PDF\]](#) [\[Certification\]](#) [\[Certification for Winner\]](#)

- [1] **Y. Yang**, H. Zhang, Y. Li, "Pipeline safety warning system based on distributed optical fiber sensing," *The 13th Doctoral Candidate Nanshan Academic Forum of Guangdong-Hong Kong-Macau Grand Bay District & No. 635 Doctoral Forum, Tsinghua University*, in Shenzhen, China, 2021. **(Oral & First prize)** [PDF]

Patents:

- [2] **Y. Yang**, H. Zhang, Y. Li, "A method for feature extraction of optical fiber warning signals for oil and gas long-distance pipelines", Chinese invention patents, 2021.
- [1] M. Zhang, G. Wu, Y. Li, **Y. Yang**, "A complex multi-frequency real-time capacitance tomography imaging method based on multiple measurement vectors", Chinese invention patents, 2020.

Projects

Open-Source Projects:

- **Easy-RL**: A deep reinforcement learning tutorial and it has already collected **2.6k more stars** on GitHub, which includes [an e-book](#) and [an online tutorial](#). Also, here are some introductions to our tutorial. [Link1] [Link2] [Link3] **Besides, we are planning to publish it with POSTS & TELECOM PRESS (人民邮电出版社), a famous publisher in China.**
- **Academic Trends Analysis**: A data-mining-based tutorial on the analysis of academic frontier trends of arxiv platform. I am the main person in charge. Here is [a video](#) and [a competition](#) on Alibaba Tianchi. Also, here are some introductions about our tutorial. [Poster] [Link1] [Link2]
- **Ensemble Learning**: An ensemble learning tutorial. And there is [a video](#) of case study and introduction to our tutorial. [Link]
- Original and translated articles in the field of data science are as follows. [SVP: An efficient data selection method for deep learning.] [Four types of classification tasks in machine learning.] [Handling missing values in data.] [Deriving decision tree algorithms.] [NLP-based COVID-19 Fake News Detection.] [Original | AI-based intelligent detection of acute intracranial haemorrhage types.]
- More open source contents can be found on [CSDN](#) and [GitHub](#).

Research Projects:

- 2021, Conducted research on workload I/O time-series prediction for storage systems in Decision Making & Reasoning Lab, Huawei Noah'S Ark Lab. The work is summarised in a paper that is submitted to AAAI22.
- 2020, Teaching assistant of [Nicholas Lane](#), professor of computer science at [University of Cambridge](#), UK. The class name is "Introduction to Deep Learning". [Certification]
- 2020, Teaching assistant of [Rakesh Kumar](#), professor of electrical and computer engineering at [UIUC](#), USA. The class name is "Artificial Intelligence for Undergraduate". [Certification]
- 2019-2020, Research on long-distance fiber optic safety monitoring and early warning technology for pipelines in complex environments with PetroChina. [Picture]
- 2019, **Inter-prediction for Multiview video coding**. [PDF] [Slides]

Awards

- **2021, China National Scholarship.**
- Kaggle Competitions Expert, Top 1,000 (0.67%).
- 2020, National Second Prize in the 17th National Postgraduate Mathematical Modelling Competition.
- 2020, Second Prize Scholarship, Tsinghua University.
- 2019, Outstanding Undergraduate, HUST.
- 2018, First Prize in the 13th National Student Smart Car Competition, Wireless Energy Saving Category (**National Champion**).
- 2018, First(Grand) Prize of Goodix Scholarship.
- 2018, National Encouragement Scholarship, Ministry of Education in China.
- 2018, Outstanding Individual of Innovation and Entrepreneurship Activities, HUST.
- 2017, First Prize in the South China of the 12th National Student Smart Car Competition, Opto-electronic Balance Category.

Activities and Volunteering

- 2020, During the Covid-19 epidemic, as a volunteer of the Tsinghua University Graduate Student Association's anti-epidemic activities, I provided one-to-one support to a child of frontline medical staff in Wuhan for her study.
- 2020, During the Covid-19 epidemic, I recorded an original song "Into the Spring" with TAP Choir. [News]
- 2019, Debate chairman of the Shenzhen government-sponsored university debate tournament. [Picture]
- 2019, Member of the Tsinghua University Shenzhen TAP Choir, participating in the "Ode to the Motherland" performance in Shenzhen (at Shenzhen Grand Theater). [Picture] [Picture]
- 2018, Participants representing more than 100 universities took the oath at the 13th National Student Smart Car Competition South China Region. [News]
- 2017, Top 10 Singers of the School of Artificial Intelligence and Automation, HUST.
- 2015-2019, Member of the College's hosting team and hosted two welcome parties and a graduation party.
- 2010, As a representative of middle school students from Shijiazhuang, Hebei Province, I went on a half-month government-to-government visit to the friendly cities of Nagano-ken, Japan.