Yiyuan Yang (杨毅远)
Master Candidate (**He is seeking a PhD position.**)

Department of Automation, Tsinghua University

Location: University Town of Shenzhen, Nanshan, Shenzhen, Guangdong, China
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 time-series, industrial signal processing, optical fiber, multi-sensor fusion, data mining, 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 optical fiber signal processing and identification
- Workload prediction and feature extraction in storage systems
- Time-series forecasting
- Semi-supervised signal processing and signal denoising
- Feature and model fusion

Education and Intern

- 2021.2-NOW AI Research Intern in Decision Making & Reasoning Lab, Huawei Noah'S Ark Lab.
- 2019.9-NOW M.E. in Department of Automation, Tsinghua University. GPA 3.98/4.0
- 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)

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. (Accepted) (**Q1, IF=4.016**)

[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. (Accepted and Early Access) (**Q1, 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. (**Q1, IF=2.046**) [Link] [PDF] [BibTeX]

Conferences:

[5] **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]

[4] **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]

[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, 2021. (**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]

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.

[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.

Projects

Open-Source Projects:

- **Easy-RL**: A deep reinforcement learning tutorial and has already collected 2.3k more Stars on GitHub, which includes an e-book and an online tutorials. Also, here are some introductions to our tutorials. [Link1] [Link2] [Link3]
- **AcademicTrends Analysis**: An 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 Aliyun Tianchi. Also, here are some introductions to our tutorials. [Poster] [Link1] [Link2]
- **Ensemble Learning**: An ensemble learning tutorial. And there is a video of case study. Also, here is an introductions to our tutorials. [Link]
- Original and translated articles in the field of data science as follows.
  - SVP：An efficient data selection method for deep learning. [Link]
  - Four types of classification tasks in machine learning. [Link]
  - Handling missing values in data. [Link]
  - Deriving decision tree algorithms. [Link]
  - NLP-based COVID-19 Fake News Detection. [Link]
  - Original | AI-based intelligent detection of acute intracranial haemorrhage types. [Link]
- More open source content can be found on CSDN and GitHub.

Research Projects:

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

Awards

- Kaggle Competitions Expert, Top 1,000 (0.7%).
- 2020, Datawhale Contributor.
- 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 Prize of Goodix Scholarship, HUST.
- 2018, National Encouragement Scholarship, Ministry of Education.
- 2018, Outstanding Individual of Innovation and Entrepreneurship Activities, HUST.
- 2017, First Prize in the South China of the 12th National Student Intelligent Vehicle 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-on-one support to the children of frontline medical staff in Wuhan for their studies.
- 2020, During the covid-19 epidemic, I recorded an original song "Into the Spring" with TAP Choir to cheer up the fight against the Covid-19. [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).
- 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 has hosted several major events including 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.