ZHIHAN GAO 高智涵

Contact: gzh93@outlook.com; zhihan.gao@connect.ust.hk

EDUCATION BACKGROUND

Peking University **Beijing, China**

Bachelor of Science, School of Physics *Sep 2012 – Jun 2016*

- Coursework: Advanced Mathematics, Linear Algebra, Introduction to Computation, Method of Mathematical Physics, Probability Theory and Statistics, Numerical Method, Data Structure and Algorithm

Hong Kong University of Science and Technology **Hong Kong SAR, China**

Doctor of Philosophy, Department of Computer Science and Engineering, School of Engineering *Sep 2016 – present*

- Coursework: Machine Learning, Knowledge Database Discovery, Parallel Programming, Bayesian Networks, Computer Vision, Advanced Algorithm, Advanced Statistics

RESEARCH INTEREST

- Spatiotemporal modeling and forecasting
- Machine learning for geospatial Earth science

PUBLICATIONS

- **Zhihan Gao**, Xingjian Shi, Boran Han, Hao Wang, Xiaoyong Jin, Danielle Maddix, Yi Zhu, Mu Li, and Yuyang Wang. "PreDiff: Precipitation Nowcasting with Latent Diffusion Models." arXiv preprint arXiv:2307.10422 (2023). [paper]
- Benson, Vitus, Christian Requena-Mesa, Claire Robin, Lazaro Alonso, José Cortés, **Zhihan Gao**, Nora Linscheid, Mélanie Weynants, and Markus Reichstein. "Forecasting localized weather impacts on vegetation as seen from space with meteo-guided video prediction." arXiv preprint arXiv:2303.16198 (2023). [paper]
- **Zhihan Gao**, Xingjian Shi, Hao Wang, Yi Zhu, Yuyang Bernie Wang, Mu Li, and Dit-Yan Yeung. "Earthformer: Exploring space-time transformers for earth system forecasting." Advances in Neural Information Processing Systems 35 (2022): 25390-25403. [paper] [project page] [poster]
- **Zhihan Gao**, Hao Wang, Yuyang Bernie Wang, Xingjian Shi, and Dit-Yan Yeung. "Probabilistic continuous-time whole-graph forecasting." In 8th SIGKDD International Workshop on Mining and Learning from Time Series–Deep Forecasting: Models, Interpretability, and Applications. 2022. [paper]
- Sun, Ting, Lei Tai, **Zhihan Gao**, Ming Liu, and Dit-Yan Yeung. "Fully using classifiers for weakly supervised semantic segmentation with modified cues." arXiv preprint arXiv:1904.01749 (2019). [paper]
- Shi, Xingjian, **Zhihan Gao**, Leonard Lausen, Hao Wang, Dit-Yan Yeung, Wai-kin Wong, and Wang-chun Woo. "Deep learning for precipitation nowcasting: A benchmark and a new model." Advances in neural information processing systems 30 (2017). [paper] [project page] [poster]
- Liu, Xuefeng, Hongyi Yu, Qingqing Ji, **Zhihan Gao**, Shaofeng Ge, Jun Qiu, Zhongfan Liu, Yanfeng Zhang, and Dong Sun. "An ultrafast terahertz probe of the transient evolution of the charged and neutral phase of photo-excited electron-hole gas in a monolayer semiconductor." 2D Materials 3, no. 1 (2016): 014001. [paper]
- Song, Sijie, Yanghao Li, **Zhihan Gao**, and Jiaying Liu. "Face hallucination based on neighbor embedding via illumination adaptation." In 2015 Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA), pp. 680-683. IEEE, 2015. [paper]

BOOK CHAPTERS

- **Zhihan Gao**, Xingjian Shi, Hao Wang, Dit‐Yan Yeung, Wang‐chun Woo, and Wai‐Kin Wong. "Deep learning and the weather forecasting problem: Precipitation nowcasting." Deep Learning for the Earth Sciences: A Comprehensive Approach to Remote Sensing, Climate Science, and Geosciences (2021): 218-239. [Book Preview]

AWARDS AND HONORS

- May Fourth Scholarship (top 15%) *Oct 2015*
- Weiming Scholarship (top 5%) *Oct 2015*
- Samsung Scholarship (top 5%) *May 2015*
- Honorable Mentions in MCM *Feb 2015*
- Honorable Mentions in MCM *Feb 2014*
- Weiming Scholarship (top 5%) *Dec 2013*
- 3rd Prize in Beijing University Physics Competition *Dec 2013*
- Excellent Student (top 5%) *Dec 2013*
- POSCO Asia Fellowship (top 5%) *Oct 2013*
- 3rd Prize in Chinese Physics Olympiad (CPhO) *Nov 2011*

ACADEMIC SERVICE

- **Conference Reviewer:** NeurIPS (2022-now), ICML (2023-now), CVPR (2023-now), ICCV (2023-now)

PRESENTATIONS

- Earthformer: Exploring space-time transformers for earth system forecasting. Shanghai Meteorology Bureau, 2022.
- Earthformer: Exploring space-time transformers for earth system forecasting. NeurIPS Presentation, 2022. [Video]