

## Education

<b>Sept. 2020 – Present</b>	<b>Northeastern University, Boston, USA</b> Ph.D. Candidate of Electrical & Computer Engineering    GPA : 3.83/4 Advisor : <i>Prof. Yun Raymond Fu</i>
<b>Sept. 2017 – Jun. 2020</b>	<b>Xi'an Jiaotong University, Xi'an, China</b> Master of Control Science and Engineering    GPA : 85.07/100    Rank : 2/152 Advisor : <i>Prof. Jing Yang &amp; Prof. Shaoyi Du</i> Thesis : Pedestrian Trajectory Prediction in Complex Scenes.
<b>Sept. 2013 – Jun. 2017</b>	<b>Xi'an Jiaotong University, Xi'an, China</b> Bachelor of Automation    GPA : 82.53/100 Advisor : <i>Prof. Longjun Liu &amp; Prof. Pengju Ren</i> Thesis : Hardware-Friendly Compression Algorithm for Convolutional Neural Networks.

## Fields of Interests

Computer Vision, Machine Learning, Behavior Prediction, Multimodal Learning, Visual-Language Model

## Publications

### • Conferences & Journals

- [C13] Jianglin Lu, **Yi Xu**, Huan Wang, Yue Bai, Yun Fu, "Latent Graph Inference with Limited Supervision," *Conference on Neural Information Processing Systems (NeurIPS)*, 2023. (accepted, to appear)
- [C12] Haichao Zhang, **Yi Xu**, Hongsheng Lu, Takayuki Shimizu, and Yun Fu, "Layout Sequence Prediction From Noisy Mobile Modality," *ACM International Conference on Multimedia (MM)*, 2023. (accepted, to appear)
- [C11] Yizhou Wang, Yue Kang, Can Qin, Huan Wang, **Yi Xu**, Yulun Zhang, and Yun Fu, "Momentum is All You Need for Data-Driven Adaptive Optimization," *IEEE International Conference on Data Mining (ICDM)*, 2023.
- [C10] **Yi Xu**, Armin Bazarjani, Hyung-gun Chi, Chiho Choi, Yun Fu, "Uncovering the Missing Pattern : Unified Framework Towards Trajectory Imputation and Prediction," *IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR)*, 2023.
- [C9] Hyung-gun Chi, Kwonjoon Lee, Nakul Agarwal, **Yi Xu**, Karthik Ramani, Chiho Choi, "AdamsFormer for Spatial Action Localization in the Future," *IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR)*, 2023.
- [C8] Yitian Zhang, Yue Bai, Huan Wang, **Yi Xu**, Yun Fu, "Look More but Care Less in Video Recognition," *Conference on Neural Information Processing Systems (NeurIPS)*, 2022.
- [C7] Yizhou Wang, Can Qin, Yue Bai, **Yi Xu**, Xu Ma, Yun Fu, "Making Reconstruction-based Method Great Again for Video Anomaly Detection," *IEEE International Conference on Data Mining (ICDM)*, 2022.
- [C6] Yizhou Wang, Can Qin, Rongzhe Wei, **Yi Xu**, Yue Bai, Yun Fu, "Self-supervision Meets Adversarial Perturbation : A Novel Framework for Anomaly Detection," *ACM International Conference on Information and Knowledge Management (CIKM)*, 2022.
- [C5] **Yi Xu**, Lichen Wang, Yizhou Wang, Yun Fu, "Adaptive Trajectory Prediction via Transferable GNN," *IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR)*, 2022.
- [C4] **Yi Xu**, Lichen Wang, Yizhou Wang, Can Qin, Yulun Zhang, Yun Fu, "MemREIN : Rein the Domain Shift for Cross-Domain Few-Shot Learning," *International Joint Conference on Artificial Intelligence (IJCAI)*, 2022.
- [C3] **Yi Xu\***, Dongchun Ren\*, Mingxia Li\*, Yuehai Chen, Mingyu Fan, Huaxia Xia, "Tra2Tra : Trajectory-to-Trajectory Prediction with a Global Social Spatial-Temporal Attentive Neural Network," *International Conference on Robotics and Automation (ICRA)*, 2021.
- [C2] **Yi Xu**, Dongchun Ren, Mingxia Li, Yuehai Chen, Mingyu Fan, Huaxia Xia, "Robust Trajectory Prediction of Multiple Interacting Pedestrians via Incremental Active Learning," *International Conference on Neural Information Processing (ICONIP)*, 2021.
- [C1] **Yi Xu\***, Jing Yang\*, Shaoyi Du, "CF-LSTM : Cascaded Feature-Based Long Short-Term Networks for Predicting Pedestrian Trajectory," *AAAI Conference on Artificial Intelligence (AAAI)*, 2020.

### • Journals

- [J4] Yanliang Zhu\*, Dongchun Ren\*, **Yi Xu\***, Deheng Qian\*, Mingyu Fan\*, Xin Li\*, Huaxia Xia\*, "Simultaneous Past and Current Social Interaction-aware Trajectory Prediction for Multiple Intelligent Agents in Dynamic Scenes," *ACM Transactions on Intelligent Systems and Technology (TIST)*, 2021.
- [J3] Yuehai Chen, Jing Yang, Kun Zhang, **Yi Xu**, Yuewen Liu, "A Feature-Cascaded Correntropy LSTM for Tourists Prediction," *IEEE Access*, 2021.
- [J2] Jing Yang, **Yi Xu**, Haijun Rong, Shaoyi Du, Hongmei Zhang, "A Method for Wafer Defect Detection Using Spatial Feature Points Guided Affine Iterative Closest Point Algorithm," *IEEE Access*, 2020.
- [J1] Jing Yang, **Yi Xu**, Haijun Rong, Shaoyi Du, Badong Chen, "Sparse Recursive Least Mean p-Power Extreme Learning Machine for Regression," *IEEE Access*, 2018.

## • Patents

- [P3] **Yi Xu**, Mingyu Fan, Dongchun Ren, Huaxia Xia, Yaxuan Dai, Deheng Qian, Yanliang Zhu, “An Obstacle Trajectory Prediction Method,” *granted China Invention Patent No. CN112348293A*.
- [P2] Mingyu Fan, **Yi Xu**, Dongchun Ren, Huaxia Xia, Yanliang Zhu, Deheng Qian, “A Model Training Method,” *granted China Invention Patent No. CN112990375B*.
- [P1] Mingyu Fan, Jiawen Huang, Dongchun Ren, Huaxia Xia, **Yi Xu**, “Model Training Method for Obstacle Trajectory Prediction Based on Transfer Learning,” *granted China Invention Patent No. CN113325855A*.

## Competitions

### INTERACTION-Dataset-Based PREdiction (INTERPRET) Challenge in NeurIPS2020 | Vehicle Future Trajectory Prediction

- Proposed dual transformer-based method to extract impact spatial-temporal feature representations.
- Won **1<sup>st</sup>** Place of the Generalizability Track and **2<sup>nd</sup>** Place of the Regular Track.

## Experiences

### Research Assistant 2020.09 – Present

#### Northeastern University, Boston, USA.

Computer Vision Transfer Learning Few-Shot Learning Time Series

##### ▷SMILE Lab.

- Propose effective behavior prediction methods to generalize to novel environments.
- Delve into the behavior (i.e. trajectory, motion) prediction and understanding problem.
- Explore unsupervised representation learning methods for time series.
- Supervisor : Prof. Yun Raymond Fu

GNN CNN Self-/Cross-Attention Transformer

### Research Intern 2023.05 – 2023.09

#### Honda Research Institute, San Jose, USA.

Visual Language Model Multimodal Learning Reasoning

##### ▷Cognition Team.

- Conducting research on multimodal learning in the autonomous driving scenario.
- Leveraging visual-language model and LLM for scene reasoning and ego-car planning.
- Supervisor : Dr. Kwonjoon Lee and Dr. Behzad Dariush.

Diffusion CLIP GPT BLIP-2 Flamingo

### Research Intern 2022.05 – 2022.09

#### Honda Research Institute, San Jose, USA.

Behavior Prediction Pattern Recognition Computer Vision

##### ▷Cognition Team.

- Proposed a unified framework for the joint problem of trajectory imputation and prediction, which is the pioneer which fills the gap in benchmarks and techniques for this joint problem.
- Curated three practical datasets for the joint problem of trajectory imputation and prediction.
- Supervisor : Dr. Chiho Choi

GNN CVAE VRNN GAN

### Research Intern 2020.06 – 2020.09

#### Meituan, Beijing, China.

Motion Prediction Pattern Recognition Computer Vision

##### ▷Autonomous Delivery Center.

- Proposed effective methods for pedestrian/vehicle trajectory prediction in complex scenes.
- Explored the importance of different trajectory samples with active learning and self-paced learning.
- Supervisor : Prof. Mingyu Fan

GNN RNN GAN Transformer Active Learning Self-Paced Learning

### Research Assistant 2017.09 – 2020.06

#### Xi'an Jiaotong University, Xi'an, China.

Computer Vision Machine Learning

##### ▷Institute of Artificial Intelligence and Robotics.

- Extra restrictions are explored for better point cloud registration.
- Attention mechanism, correntropy are utilized for interaction-aware pedestrian trajectory prediction.

Iterative Closest Point Algorithm Attention Mechanism LSTM Correntropy

## Projects

### Hardware (FPGA) Project with Xilinx Company | Reinforcement Learning for Obstacle Avoidance

- Proposed effective algorithms for obstacle avoidance via reinforcement learning.
- Designed efficient parallel operation pipeline at the global level for hardware implementation on FPGA.

## Awards

- 2022 & 2023    Travel Award of Northeastern University.
- 2022 & 2023    Travel Award of CVPR 2022 & 2023.
- 2018    National Scholarship (Highest Honor in China).
- 2018    Excellent Graduate Student of Xi'an Jiaotong University.
- 2018    Third Prize of the 15th Mathematical Contest in Modeling.
- 2018    Third Prize of the 4th Future Flight Vehicle Innovation Competition.