

Education

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

Fields of Interests

Computer Vision, Machine Learning, Temporal Prediction, Pattern Recognition, Transfer Learning, Data Mining

Publications

• Conferences & Journals

- **Yi Xu**, Lichen Wang, Yizhou Wang, Can Qin, Yulun Zhang, Yun Fu, "MemREIN : Rein the Domain Shift for Cross-Domain Few-Shot Learning." *IJCAI2022*.
- **Yi Xu**, Lichen Wang, Yizhou Wang, Yun Fu, "Adaptive Trajectory Prediction via Transferable GNN." *CVPR2022*.
- **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." *IEEE Robotics and Automation Letters/ IEEE International Conference on Robotics and Automation (ICRA 2021)*, * denotes equal contribution.
- **Yi Xu**, Dongchun Ren, Mingxia Li, Yuehai Chen, Mingyu Fan, Huaxia Xia, "Robust Trajectory Prediction of Multiple Interacting Pedestrians via Incremental Active Learning." *The 28th International Conference on Neural Information Processing (ICONIP2021)*.
- **Yi Xu**, Jing Yang, Shaoyi Du, "CF-LSTM : Cascaded Feature-Based Long Short-Term Networks for Predicting Pedestrian Trajectory." *The 34th AAAI Conference on Artificial Intelligence (AAAI-20)*.
- 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)*, * denotes equal contribution.
- Jing Yang, **Yi Xu**, Haijun Rong, Shaoyi Du, Badong Chen, "Sparse Recursive Least Mean p-Power Extreme Learning Machine for Regression," *IEEE Access*, vol. 6, pp. 16022-16034, 2018.
- Yuehai Chen, Jing Yang, Kun Zhang, **Yi Xu**, Yuehu Liu, "A Feature-Cascaded Correntropy LSTM for Tourists Prediction," *IEEE Access*, vol. 9, pp. 32810-32822, 2021.
- 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*, vol. 8, pp. 79056-79068, 2020.

• Pre-prints

- Yizhou Wang, Yue Kang, Can Qin, **Yi Xu**, Huan Wang, Yulun Zhang, Yun Fu, "Adapting Stepsizes by Momentumized Gradients Improves Optimization and Generalization."
- Yizhou Wang, Can Qin, Rongzhe Wei, **Yi Xu**, Yue Bai, Yun Fu, "SLA²P : Self-supervised Anomaly Detection with Adversarial Perturbation."

• Patents

- **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.
- Mingyu Fan, **Yi Xu**, Dongchun Ren, Huaxia Xia, Yanliang Zhu, Deheng Qian, "A Model Training Method," Granted China Invention Patent No. CN112990375B.
- 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 **1st** Place of the Generalizability Track and **2nd** Place of the Regular Track.

Experiences

Research Assistant
2020.09 – Present

Northeastern University, Boston, USA.

Computer Vision

Transfer Learning

Few-Shot Learning

▷ **SMILE Lab.**

- > Propose effective methods for enhancing the robustness of models to generalize to unseen domains.
- > Delved into motion prediction and action recognition from the multi-task perspective.

GNN

RNN

GAN

Transformer

Active Learning

Self-Paced Learning

Research Intern
2020.06 – 2020.08

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.

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

Research Assistant
2016.06 – 2016.08

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

Machine Learning

Optimization

▷ **Information-Technology Talent Program.**

- > Various methods are explored for avoiding getting stuck in the local optimal.
- > Proposed robust strategies for improve the performance of the fireworks algorithm.

Evolutionary Algorithms

Fireworks Algorithm

Particle Swarm Optimization

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

- 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.

Skills

Languages Python, C/C++, MATLAB.

Tools VS Code, Docker, VIVADO.

Frameworks PyTorch, TensorFlow, OpenCV.