

Jiangxin Sun

M.E. STUDENT · SUN YAT-SEN UNIVERSITY

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Education

Sun Yat-sen University

Sep. 2020 - Jun. 2023

M.E. STUDENT IN COMPUTER SCIENCE AND TECHNOLOGY

- Supervisors: Prof. **Wei-Shi Zheng** & Prof. **Jian-Fang Hu**

Sun Yat-sen University

Aug. 2016 - Jun. 2020

B.E. IN COMPUTER SCIENCE AND TECHNOLOGY

- GPA: 3.9/4.0

Research Interests

- My research interests lie in Computer Vision and Machine Learning. I am very interested in developing perceptual systems and decision-making systems. Currently, my focus is on instance segmentation prediction and 3D human motion prediction.

Publications

JOURNAL ARTICLES

APANet: Auto-Path Aggregation for Future Instance Segmentation Prediction [\[LINK\]](#)

Jian-Fang Hu*, **Jiangxin Sun***, Zihang Lin, Jian-Huang Lai, Wenjun Zeng, Wei-Shi Zheng (* equal contribution)
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2021

CONFERENCE PROCEEDINGS

You Never Stop Dancing: Non-freezing Dance Generation via Bank-constrained Manifold Projection [\[LINK\]](#)

Jiangxin Sun, Chunyu Wang, Huang Hu, Hanjiang Lai, Zhi Jin, Jian-Fang Hu
Advances in Neural Information Processing Systems (NeurIPS), 2022

Action-guided 3D Human Motion Prediction [\[LINK\]](#)

Jiangxin Sun, Zihang Lin, Xintong Han, Jian-Fang Hu, Jia Xu, Wei-Shi Zheng
Advances in Neural Information Processing Systems (NeurIPS), 2021

Predictive Feature Learning for Future Segmentation Prediction [\[LINK\]](#)

Zihang Lin*, **Jiangxin Sun***, Jian-Fang Hu, Qizhi Yu, Jiang-Huang Lai, Wei-Shi Zheng (* equal contribution)
Proceedings of the IEEE International Conference on Computer Vision (ICCV), 2021

Predicting future instance segmentation with contextual pyramid convlstm [\[LINK\]](#)

Jiangxin Sun, Jiafeng Xie, Jian-Fang Hu, Zihang Lin, Jian-Huang Lai, Wenjun Zeng, Wei-Shi Zheng
Proceedings of the ACM International Conference on Multimedia (ACM MM), 2019

Research Experience

Instance Segmentation Prediction

UNDERGRADUATE & GRADUATE RESEARCHER IN SUN YAT-SEN UNIVERSITY

Aug. 2018 - Present

- Advisors: Prof. **Wei-Shi Zheng** & Prof. **Jian-Fang Hu** & Prof. **Wenjun Zeng** & Prof. **Jianguo Zhang**
- Aims to predict future unobserved instance segmentation according to observed past RGB frames. The mainstream is to insert a prediction block into an instance segmentation model (e.g., Mask R-CNN) and to predict future pyramid features.
- Topic 1: Adaptive Context Aggregation**
 - Developed a flexible network for collaboratively predicting multi-level pyramid features.
 - Proposed an adaptive aggregation approach to exploit the underlying structural relationship among pyramid features.
 - Designed auto-path to selectively and adaptively aggregate contextual information among different pyramid levels.
 - Preliminary work accepted by **ACM MM** 2019 [\[LINK\]](#) & Revised approach accepted by **TPAMI** in 2021 [\[LINK\]](#).
- Topic 2: Predictive Feature Learning**
 - Pointed out the contradiction between learning discriminative segmentation features and learning reliable future prediction.
 - Designed an autoencoder-based framework to learn a predictive representation of segmentation features via explicitly modeling prediction uncertainty and introducing uncertainty decay.
 - Proposed an uncertainty-aware prediction module to learn both feature prediction and uncertainty estimation.
 - Preliminary work accepted by **ICCV** 2021 [\[LINK\]](#) & Revised approach scheduled to be submitted to **TPAMI**.

3D Human Motion Prediction

COMPUTER VISION GROUP INTERN IN HUYA INC.

Jul. 2020 - Jul. 2021

- Advisor: Dr. **Xintong Han**
- **Topic: Action-guided Motion Prediction**
 - Aims to predict future unobserved 3D human motion according to observed past RGB frames. The mainstream is to insert a prediction block into a motion capture model and to predict future latent features.
 - Introduced action information into human motion prediction.
 - Constructed an action-specific memory bank to exploit representative sub-actions and retrieved possible motion dynamics to guide future motion prediction
 - Accepted by **NeurIPS** 2021. [\[LINK\]](#)

INTELLIGENT MULTIMEDIA GROUP INTERN IN MICROSOFT RESEARCH ASIA

Aug. 2021 - Jan. 2022

- Advisor: Dr. **Chunyu Wang**
- **Topic: Non-freezing Dance Generation**
 - Aims to predict future dance choreography conditioned on past motion and music pieces. The mainstream is to learn single-modal feature extractors and a cross-modal predictor.
 - Achieved non-freezing large-magnitude dance generation.
 - Presented bank-constrained manifold projection to suppress the noises in the predicted motions and leveraged the coherence in <past, future> motion dynamics to reduce the uncertainty and ambiguity in motion prediction.
 - Accepted by **NeurIPS** 2022. [\[LINK\]](#)

Awards

National Scholarship, <i>Sun Yat-sen University</i>	2022
Shenzhen Stock Exchange Scholarship, <i>Sun Yat-sen University</i>	2021
Outstanding Graduate Scholarship, <i>Sun Yat-sen University</i>	2020
Excellent Student Scholarship, <i>Sun Yat-sen University</i>	2019