

Jiangxin Sun

M.E. STUDENT · SCHOOL OF COMPUTER SCIENCE AND ENGINEER

Sun Yat-sen University, Guangzhou, Guangdong, China

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Education

Sun Yat-sen University

M.E. STUDENT IN COMPUTER SCIENCE AND TECHNOLOGY

- Intelligence Science and System Lab

Guangzhou, China

Sep. 2020 - Present

Sun Yat-sen University

B.E. IN COMPUTER SCIENCE AND TECHNOLOGY

- GPA: 3.9/4.0

Guangzhou, China

Sep. 2016 - Jun. 2020

Research Interests

- My research interests lie in Computer Vision and Machine Learning. Currently, my focus is on semantic/instance segmentation prediction and 3D human motion capture/prediction.

Research Experience

Instance Segmentation Prediction

Aug. 2018 - Present

UNDERGRADUATE & GRADUATE RESEARCHER IN SUN YAT-SEN UNIVERSITY

- Advisors: Prof. **Wei-Shi Zheng** & Assoc. 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 (i.e., Mask R-CNN) and to predict future pyramid features.
- Proposed an adaptive aggregation approach to exploit structural relationship among pyramid features. Our designed auto-path can **selectively and adaptively aggregate contextual information** among different pyramid levels. Preliminary work accepted at **ACM MM** 2019 & Revised approach accepted at **TPAMI** in 2021.
- Pointed out the contradiction between learning discriminative segmentation features and learning reliable future prediction. Designed an autoencoder-based framework to **learn predictive representation of segmentation features** via explicitly modeling prediction uncertainty and introducing uncertainty decay. Preliminary work accepted at **ICCV** 2021 & Revised approach scheduled to be submitted to TPAMI.

3D Human Motion Prediction

Jul. 2020 - Jul. 2021

COMPUTER VISION GROUP INTERN IN HUYA INC.

- Advisors: Dr. **Xintong Han**
- Aims to predict future unobserved human motion (3D mesh) according to observed past RGB frames. The mainstream is to insert a prediction block into a 3D pose estimation model and to predict future latent features.
- Introduced action information into human motion prediction. Since actions with a certain type consists of common atoms, human motion can be better predicted with future **action-specific motion dynamics** stored in the memory bank. Accepted at **NeurIPS** 2021.

Dance Generation

Aug. 2021 - Jan. 2022

INTELLIGENT MULTIMEDIA GROUP INTERN IN MSRA

- Advisor: Dr. **Chunyu Wang**
- Aims to predict future dance choreography conditioned on past motion and music piece. The mainstream is to learn single-modal feature extractors and a cross-modal predictor.
- Achieved non-freezing large-magnitude dance generation. We present **bank-constrained manifold projection** to reduce the noises in the predicted motions and model the coherence in <past, future> motion dynamics to reduce the uncertainty and ambiguity in motion prediction. Accepted at **NeurIPS** 2022.

Publications

JOURNAL ARTICLES

APANet: Auto-Path Aggregation for Future Instance Segmentation Prediction

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, pp. 3386–3403, 2022

CONFERENCE PROCEEDINGS

You Never Stop Dancing: Non-freezing Dance Generation via Bank-constrained Manifold Projection

Jiangxin Sun, Chunyu Wang, Huang Hu, Hanjiang Lai, Zhi Jin, Jian-Fang Hu

Advances in Neural Information Processing Systems, 2022

Action-guided 3D Human Motion Prediction

Jiangxin Sun, Zihang Lin, Xintong Han, Jian-Fang Hu, Jia Xu, Wei-Shi Zheng

Advances in Neural Information Processing Systems, 2021

Predictive Feature Learning for Future Segmentation Prediction

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, 2021

Predicting future instance segmentation with contextual pyramid convlstm

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, 2019