

Songyao Jiang

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EDUCATION HISTORY

- 09/2015 - present **NORTHEASTERN UNIVERSITY** **Boston, MA**
Ph.D. Candidate in Computer Engineering (advised by Dr. Yun Fu)
- Research Topics: Pose Estimation, Generative Models, Adversarial Training, Computer Vision, Machine Learning.
- 09/2013 - 06/2015 **UNIVERSITY OF MICHIGAN** **Ann Arbor, MI**
Master of Electrical and Computer Engineering
- Coursework: Linear Algebra, Machine Learning, Image Processing, Database Management, Embedded System Programming, etc.
- 09/2009 - 06/2013 **HONG KONG POLYTECHNIC UNIVERSITY** **Hong Kong**
Electrical Engineering, Bachelor of Engineering
- Coursework: Programming, Computer Architecture, Electrical Circuit etc.
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WORK EXPERIENCE

- 01/2017 - 09/2017 **GIARAN, INC (acquired by Shiseido Americas in Nov. 2017)** **Boston, MA**
Research Engineer (co-founder of the startup company)
- Independently developed several key algorithms in the core products, including a color calibration system, a makeup addon system, a color match and retrieval system using OpenCV and Caffe in C++.
 - Contributed to the development of the face detection and alignment algorithm, the makeup removal algorithm, and the makeup recommendation algorithm.
 - Constructed a web-based real-time makeup app using JavaScript frontend and Tomcat Java EE as backend. Port our C++ libraries to Java using SWIG.
- 05/2015 - 08/2015 **TGOOD LIMITED COMPANY** **Qingdao, China**
Grouped Smart Charging Control System for Electric Vehicles
- Developed a smart charging algorithm for massively grouped EV charging system, to mitigate the charging load on power system and improve the battery life. This charging algorithm automatically recognizes EVs and arranges their charging on demand as well as providing specialized charging profiles for connected EVs.
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RECENT RESEARCH PROJECTS

- 07/2018 - present **NORTHEASTERN UNIVERSITY** **Boston, MA**
Video-based Multi-person 2D Pose Estimation with Tracking
- Improved the accuracy of pose estimation and tracking by utilizing the temporal information of the human body movement between adjacent video frames.
 - Developed a novel method of extracting movement of human body using deep CNN and use this to refine the pose estimation results.
 - Developing a video-based parts association algorithm for pose tracking.
- 05/2018 - 11/2018 **NORTHEASTERN UNIVERSITY** **Boston, MA**
Face Recognition in Low-light Condition Using Transfer Learning
- In low-light condition, we utilized IR wavelength to obtain the portrait images of the target person. However, those IR images are very different from the visible images that we used to train our deep face recognition and verification models.
 - To utilize the what we learned from visible images and apply it on IR images, we developed a semi-supervised metric learning method and an unsupervised adversarial method to transfer the knowledge we learned from visible spectrum to IR spectrum.

- 03/2018 – **NORTHEASTERN UNIVERSITY** **Boston, MA**
05/2018 **Spatially Controllable Conditional Image Generation**
- Conditional image generation methods always focus on class labels, where the spatial contents are stochastically generated by latent vectors. We proposed a spatially constrained adversarial network, which decouples the spatial constraints from the latent vector and makes them available as additional controllable signals in image generation.
 - Achieved better visual quality and spatial controllability at the same time.
- 12/2017 – **NORTHEASTERN UNIVERSITY** **Boston, MA**
02/2018 **Facial Attribute Translation using Adversarial Networks**
- Created a facial attribute translation algorithm using a novel framework based on generative adversarial networks.
 - The system could modify the facial attributes according to the user input including but not limited to age, gender, facial expression and hair color. Due to guidance of facial segmentation, this method is superior in realistic results and image quality.
- 02/2016 – **NORTHEASTERN UNIVERSITY** **Boston, MA**
04/2016 **Facial Attributes Classification and Makeup Addon System**
- Constructed a classification system, which aimed to classify the facial attributes such as skin color, face shape, eye shape into their classes. We extracted predefined features from face image and trains them using multi-class SVM.
 - The classes of facial attributes are used to recommend a make-up style for the user. We also built a makeup add-on system to visualize the recommended makeup.
- 12/2015 – **NORTHEASTERN UNIVERSITY** **Boston, MA**
03/2016 **A Machine-Learning Approach of Snow Detection for PV Power Prediction**
- Detected the snow effects on PV power output during winter when PV panels experience snowfalls, a machine learning approach which converts the snow detection problem into a classification problem is created. The overall accuracy of PV power prediction was significantly improved.

RESEARCH INTERESTS

Human Face and Gesture, Generative Models, Pose Estimation, Style Transfer, Adversarial Training.

PUBLICATIONS

- **Jiang, S.**, Liu, H., Wu, Y., & Fu, Y. (2018). Spatially Constrained Generative Adversarial Networks for Conditional Image Generation. *Submitted to a Springer Journal. Under Review.*
 - **Jiang, S.**, Tao, Z., & Fu, Y. (2019, May). Segmentation Guided Image-to-Image Translation with Adversarial Networks. In *Automatic Face & Gesture Recognition (FG 2019), 2019 14th IEEE International Conference*. IEEE.
 - Alashkar, T., **Jiang, S.**, & Fu, Y. (2017, May). Rule-Based Facial Makeup Recommendation System. In *Automatic Face & Gesture Recognition (FG 2017), 2017 12th IEEE International Conference on* (pp. 325-330). IEEE.
 - Alashkar, T., **Jiang, S.**, Wang, S., & Fu, Y. (2017, February). Examples-Rules Guided Deep Neural Network for Makeup Recommendation. In *AAAI* (pp. 941-947).
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HONORS & AWARDS

- 2009-2013 **HONG KONG POLYTECHIC UNIVERSITY** **Hong Kong**
Outstanding Scholarship for Non-local Students
- Four times, one for each academic year
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COMPUTER SKILLS

PyTorch, TensorFlow, OpenCV, Python, C/C++, Caffe, MATLAB, Java, JavaScript, Database Management