

XI YIN

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EDUCATION

- **Ph.D., Computer Science**, Michigan State University 9/2013 – present
 - Committee: Xiaoming Liu (chair), Anil Jain, Arun Ross, Daniel Morris
 - GPA: 3.75 / 4.0
 - **Bachelor, Electrical Engineering**, Wuhan University, China 9/2009 – 6/2013
 - GPA: 90 / 100
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EXPERIENCE

- **Research Intern**, Media Analytics Department, NEC Labs America 5/2017 – present
 - **Research Intern**, National Laboratory of Pattern Recognition, Chinese Academy of Science 3/2013 – 5/2013
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BACKGROUND & SKILLS

- *Research*: Computer Vision, Deep Learning, Face Recognition
 - *Programming*: C / C++, C#, Python, Lua, MATLAB, etc.
 - *Tools*: Torch, Caffe, OpenCV, Weka, L^AT_EX, etc.
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FEATURED PROJECTS

- **FF-GAN: Large-Pose Face Frontalization**
FF-GAN is proposed as an end-to-end CNN framework to achieve face frontalization even for in-the-wild extreme-profile faces. Specifically, a deep 3D Morphable Model (3DMM) is incorporated in order to provide low frequency shape and texture regularizations beyond the training data. A generator takes the input image as well as the predicted 3DMM coefficients for image synthesis under multiple supervisions. A discriminator and a face recognition engine are employed to guide the synthesis of realistic and identity-preserved frontal faces.
- **DR-GAN: Disentangled Representation Learning GAN**
This work focuses on disentangled representation learning for pose-invariant face recognition by modeling the face rotation process. DR-GAN improves conventional GAN in three ways. First, the generator is formulated as an encoder and a decoder with the representation bridging them. Second, a pose code is provided to the decoder to specify the target pose of the generated face image, which results in the disentanglement of pose variation from the learnt identity representation. Third, the discriminator performs multi-task learning to supervise face rotation.
- **Simultaneous Pedestrian Detection and Segmentation**
This work designs a framework for pedestrian detection via simultaneous segmentation. It consists of a Region Proposal Network (RPN) and a Binary Classification Network (BCN). A segmentation branch is employed in each of the network with bounding box-based weak annotations. It is observed that this segmentation supervision helps to illuminate the pedestrian features in the CNN framework. State-of-the-art performance on Caltech database is achieved.
- **Multi-Task Learning for Face Recognition**
This project explores how and why pose, illumination, and expression (PIE) estimations can help face recognition in a multi-task CNN framework. It is shown that the side task supervisions help to disentangle the variations from identity features. A dynamic weighting scheme is employed to balance each side task during the training process. Further, a pose-directed multi-task CNN is proposed to learn pose-specific identity features for different pose groups, which further improves the performance of face recognition on both controlled and in-the-wild databases.

- **Plant Vision for Leaf Segmentation, Alignment, and Tracking**

This system performs joint multi-leaf segmentation, alignment, and tracking for fluorescence plant videos. This problem is resolved via two optimization processes with carefully designed loss functions. A multi-modality imagery database named MSU-PID is collected and released. It includes two different kinds of plant: bean and Arabidopsis, which are captured under four different sensors: fluorescence, infrared (IR), RGB, and depth. The proposed algorithm achieves competitive results in the Leaf Segmentation Challenging (LSC).

PUBLICATIONS

Peer-Reviewed Conference Papers:

1. **Xi Yin**, Xiang Yu, Kihyuk Sohn, Xiaoming Liu, Manmohan Chandraker. "Towards Large-Pose Face Frontalization in the Wild," *IEEE Int. Conf. Computer Vision (ICCV)*, 2017.
2. Garrick Brazil, **Xi Yin**, Xiaoming Liu. "Illuminating Pedestrians via Simultaneous Detection and Segmentation," *IEEE Int. Conf. Computer Vision (ICCV)*, 2017.
3. Luan Tran, **Xi Yin**, Xiaoming Liu. "Disentangled Representation Learning GAN for Pose-Invariant Face Recognition," *IEEE Conf. Computer Vision and Pattern Recognition (CVPR)*, 2017. (**Oral Presentation**)
4. Amin Jourabloo*, **Xi Yin***, Xiaoming Liu. "Attribute Preserved Face De-identification," *IAPR Int. Conf. Biometrics (ICB)*, 2015. (* equal contribution)
5. **Xi Yin**, Xiaoming Liu, Jin Chen, David Kramer. "Multi-Leaf Tracking from Fluorescence Plant Videos," *IEEE Int. Conf. Image Processing (ICIP)*, 2014. (**Top 10% Paper**)
6. **Xi Yin**, Xiaoming Liu, Jin Chen, David Kramer. "Multi-Leaf Alignment from Fluorescence Plant Images," *IEEE Winter Conf. Application of Computer Vision (WACV)*, 2014. (**Best Student Paper Award**)

Peer-Reviewed Journal Papers:

7. **Xi Yin**, Xiaoming Liu, Jin Chen, David Kramer. "Multi-Leaf Segmentation, Alignment, and Tracking from Fluorescence Plant Videos," *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, to appear, 2017.
8. Luan Tran, **Xi Yin**, Xiaoming Liu. "Representation Learning by Rotating Your Faces," *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, under review.
9. **Xi Yin**, Xiaoming Liu. "Multi-Task Convolutional Neural Network for Pose-Invariant Face Recognition," *IEEE Transactions on Image Processing (TIP)*, under review.
10. Jeffrey Cruz*, **Xi Yin***, Xiaoming Liu, Saif Imran, Daniel Morris, David Kramer, Jin Chen. "Multi-Modality Imagery Database for Plant Phenotyping," *Machine Vision and Applications (MVA)*, 2016. (* equal contribution)
11. Hanno Schar, Massimo Minervini, Andrew French, Christian Klukas, David Kramer, Xiaoming Liu, Imanol Muntion, Jean-Michel Pape, Gerrit Polder, Danijela Vukadinovic, **Xi Yin**, Sotirios Tsafaris. "Leaf Segmentation in Plant Phenotyping: A Collation Study," *Machine Vision and Applications (MVA)*, 2016.

HONORS & AWARDS

- Graduate Assistantship and Tuition Scholarship of Michigan State University 2013 – 2017
- 2nd Prize at Engineering Research Symposium of Michigan State University 2016, 2017
- Research Fellowship of Michigan State University 2014, 2016
- Top 10% Paper Award at ICIP 2014 2014
- Best Student Paper Award at WACV 2014 2014
- 3rd Prize of North China Mathematical Contest in Modeling 2012
- 2nd Prize of Central China Mathematical Contest in Modeling 2011
- Outstanding Student of Wuhan University 2011 – 2013
- National Scholarship 2011 – 2013