

Shun Zhang

CONTACT INFORMATION

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RESEARCH INTERESTS

Object Tracking, Object Detection, Face Recognition and Verification, Gesture Recognition and Image Classification. Current work: Visual Object Tracking

EDUCATION

University of California, Merced, CA, USA

Visiting student, Electrical Engineering and Computer Science Oct. 2014 - May 2015
• Advisor: Ming-Hsuan Yang

Xi'an Jiaotong University, Xi'an, China

Ph.D. Candidate, Electronic and Information Engineering Sep. 2009 - Present
• Major: Control Science and Engineering
• Research Topic: Pattern Recognition and Intelligent Systems
• Advisors: Yihong Gong, Jinjun Wang, Yuehu Liu

Xi'an Jiaotong University, Xi'an, China

B.S., Electronic and Information Engineering Sep. 2005 - Jun. 2009
• Major: Microelectronics

PUBLICATIONS

Shun Zhang, Jinjun Wang, Zelun Wang, Yihong Gong and Yuehu Liu. *Multi-Target Tracking by Learning Local-to-Global Trajectory Models*. In Pattern Recognition, Volume 48, Issue 2, 2015, Pages 580-590.

Shun Zhang, Jia-Bin Huang, Jongwoo Lim, Jinjun Wang, Yihong Gong and Ming-Hsuan Yang. *Tracking Persons of Interest via Adaptive Discriminative Features*. Accepted in ECCV 2016.

Shun Zhang, Jinjun Wang, Yihong Gong and Shizhou Zhang. *Free Hand Gesture with "Touchable" Virtual Interface for Human-3DTV Interface*. In 3DTV-CON 2015 conference (oral).

Shun Zhang, Yihong Gong and Jinjun Wang. *Deep Metric Learning with Improved Triplet Loss for Face Clustering in Videos*, Accepted in PCM 2016.

Dahu Shi, Shun Zhang, Jinjun Wang and Yihong Gong. *Detection and Association based Multi-target Tracking in Surveillance Video*. In BigMM 2015 workshop.

Zelun Wang, Jinjun Wang, Shun Zhang and Yihong Gong. *Visual Tracking based on On-line Sparse Feature Learning*. In Image and Vision Computing, Volume 38, 2015, Pages 24-32.

Sanping Zhou, Jinjun Wang, Shun Zhang, Yudong Liang and Yihong Gong. *Active contour model based on local and global intensity information for medical image segmentation*. To appear in Neurocomputing, 2016.

Xinzi Zhang, Jinjun Wang, Yihong Gong, Shizhou Zhang and Shun Zhang. *Low Computation Face Verification using Class Center Analysis*. In ICPR 2014.

Shizhou Zhang, Jinjun Wang, Yihong Gong, Shun Zhang and Xinzi Zhang. *Image Parsing by Loopy Dynamic Programming*. In NeuroComputing, Volume 145, 2014, Pages 240-249.

COMPETITION AWARDS

Shun Zhang (Team Leader), Dahu Shi, Jinjun Wang, Yihong Gong. The National Graduate Contest 2014 on Smart-City Technology and Creative Design. The 2nd Prize in single-camera object tracking.

Shun Zhang (Team Leader), Zhiheng Ma, Shaojin Ding, Yang Zhong, Jinjun Wang, Yihong Gong. The National Graduate Contest 2015 on Smart-City Technology and Creative Design. The 3rd Prize in face recognition.

RESEARCH EXPERIENCE

Multi-Face Tracking in TVs and music videos, *University of California, Merced and Xi'an Jiaotong University, Oct. 2014 - present*.

- Designed an effective feature learning method to learn discriminative and adaptive features for faces in a specific video in an unsupervised manner.
- Explored the contrastive and triplet loss functions for directly optimizing the embedding space.
- We introduced a new annotated dataset including 8 challenging music videos with large face appearance variations across shots.
- The experiment results on 7 TV videos and 8 music videos demonstrated the effectiveness of the learned adaptive features.

Multi-Target Tracking in Surveillance Videos, *Xi'an Jiaotong University, Apr. 2013 - Oct. 2014*.

- Designed the multi-target tracking task as assigning target identities to detections using an Markov Random Filed model.
- Developed a novel detection based tracking method by linking detections into tracklets and further into trajectories.
- Developed a unified algorithm that can automatically relearn the trajectory models from the local and global information for finding the joint optimal assignment.
- The experiment results showed that our proposed method achieved state-of-the-art tracking performance compared with other methods.

Visual Tracking by Sparse Feature Extraction, *Xi'an Jiaotong University, Jan. 2014 - Aug. 2014*.

- Developed a real-time tracking method by extracting sparse feature to represent targets in video.
- Designed an online updated scheme of discriminative feature selection to adapt the appearance change, luminance change and drift.
- The experiment results on multiple publicly standard datasets revealed the state-of-the-art tracking performance.

Food Classification Project, *Xi'an Jiaotong University and Changhong Electric Co., Ltd., Sep. 2013 - May. 2014*.

- Responsible for the development of a multi-class classification using low level feature combination and linear spatial pyramid matching based on sparse coding, which is later applied to the food classification of Changhong smart fridge system.

Human-3DTV Interaction Project, *Xi'an Jiaotong University, Jul. 2012 - Apr. 2013*.

- Designed a virtual interface projected by 3DTV as an intuitive way for interacting with the user.
- Developed a virtual interface module which displayed stereoscopic virtual interface with the predefined contents at specified 3D location in front of the user.

- Developed a finger gesture recognition module which predicted the users' intention.
- Vision Chip Project**, *Xi'an Jiaotong University, Sep. 2009 - Jul. 2012.*
- Developed a real-time non-uniform sampling method for video sequences which was implemented in an FPGA chip.
 - In charge of the integration, simulation and evaluation of the vision chip which supported foreground segmentation, visual tracking, position calculation, floating-point operation and so on.
 - Designed a printed circuit board which supported various real-time video and image processing. The board provided two Altera FPGA chips, SDRAM, DDR2 and some other frequently-used interfaces.

PROGRAMMING
SKILLS

- Proficiency in C/C++, Matlab and L^AT_EX .
- Experience in OpenCV, Python, Photoshop, Verilog, Altium, Modelsim.
- Use SVN for version control and teamwork.

REFERENCES

Ming-Hsuan Yang
Associate Professor
University of California, Merced
Homepage: <http://faculty.ucmerced.edu/mhyang/>

Yihong Gong
Professor
Xi'an Jiaotong University
Homepage: <http://gr.xjtu.edu.cn/web/ygong>

Jinjun Wang
Professor
Xi'an Jiaotong University
Homepage: <http://gr.xjtu.edu.cn/web/jinjun>

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