WU Fanzi

Ph.D. Candidate
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Resaerch Interests

3D face reconstruction, shape from shading, face tracking, face alignment.

Education

2014/08-present **Ph.D Candidate**, Department of Electronic Engineering
The Chinese University of Hong Kong, Hong Kong SAR
Supervisors: Prof. King Ngi Ngan, Prof. Thierry Blu

2010/09-2014/07 **Bachelor**, School of Electronic Information Engineering
Tianjin University, Tianjin

Selected Publications

Morphable Model-based Multi-view 3D Face Reconstruction with Convolutional Neural Networks

F. Wu, L. Bao, Y. Ling, Y. Chen, Y. Song, S. Li, K. Ngan, W. Liu. *Accepted to IEEE Computer Society Conference on Computer Vision and Pattern Recognition (**CVPR**), 2019*
We propose an unsupervised leanrnig method that reconstrut 3D face from multiview images. A novel loss function is proposed to constrain the shape invariance between different views.

Cascaded Regression using Landmark Displacement for 3D Face Reconstruction

F. Wu, S. Li, T. Zhao, K. Ngan. *Submitted to Pattern Recognition Letters.*
We propose a cascaded regression algorithm to reconstruct 3D human face with pose and expression variations. A high level feature that utilized landmark displacement is combined with HOG featuer to represent facial attributes. Besides, we aligned the 3D face datasets to same topology with 3D face model for more accurate evaluation.

Model-based Face Reconstruction using SIFT Flow Registration and Spherical Harmonics

F. Wu, S. Li, T. Zhao, K. Ngan. *International Conference on Pattern Recognition (**ICPR**), 2016.*
An optimization-based model fitting algorithm is proposed in this paper. We propose using SIFT flow to align 2D landmarks and 3D key points projection and a new term to evaluate distances on facial boundary. The fitting result is further refined using shape from shading method.

A Facial Expression Model with Generative Albedo Texture

S. Li, **F. Wu**, T. Zhao, K. Ngan. *Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (**APSIPA ASC**), 2016.*
A facial expression model (FEM) is developed which can synthesize various face shapes and albedo textures.

Experience

2018/06-present Tencent AI Lab, Shenzhen, Intern

Research on 3D face reconstruction from RGB images. Design an CNN-based algorithm that regress 3D face model parameters from multiview images. This work has been accepted by CVPR 2019.

2013/09-2014/01 AI & PR Lab, National Central Univ, Taiwan, Research Assistant

Working on face recognition and face expression recognition.

2012/09-2013/06 The NXP Cup National University Students Intelligent Car Race (Camera group)

Design an Intelligent Car both in hardware and software and won Second Prize.

Activities

Reviews
Internation Conference on Visual Communications and Image Processing (VCIP)
IEEE Transactions on Multimedia(TMM)
IEEE International Conference on Multimedia and Expo (ICME)

Skills

Programming: Python, Matlab, and C++