

# Meng Zhang

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## Education

### Ph.D Candidate, Zhejiang University

09/2013 - current

- Computer Science, State Key Lab of CAD & CG
- Advisor: Kun Zhou

### M.S., Xidian University

09/2010 - 03/2013

- Telecommunication Engineering, State Key Lab of ISN
- Advisor: Guang Jiang
- Outstanding Graduate Student

### B.E., Xidian University

09/2006 - 06/2010

- Telecommunication Engineering

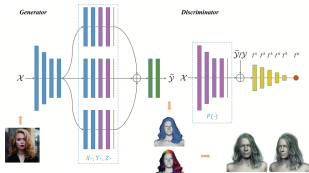
## Skills & Research Interests

- **Programming Language:** C++, Matlab, Python.
- **Computer Graphics:** 3D shape capture, image-based modeling, structure-aware shape analysis, texture mapping and synthesis.
- **Computer Vision:** 3D structure and reconstruction.
- **Computing Methodologies:** Deep learning, data-driven approaches, patch-based matching.

## Publications

- Meng Zhang, and Youyi Zheng, "Hair-GANs: Recovering 3D Hair Structure from a Single Image", arXiv: 1811.06229, (2018)
- Meng Zhang, Pan Wu, Hongzhi Wu, YanLin Wen, Youyi Zhen and Kun Zhou, "Modeling Hair from an RGB-D Camera", ACM Transactions on Graphics, (2018) Vol.37(6), pp.205:1-205:10. (*Siggraph Asia 2018*)
- Meng Zhang, Menglei Chai, Hongzhi Wu, Hao Yang and Kun Zhou, "A Data-driven Approach to Four-view Image-based Hair Modeling", ACM Transactions on Graphics, (2017) Vol.36(4), pp.156:1-156:11. (*Siggraph 2017*)
- Meng Zhang, Guang Jiang, Chengke Wu and Long Quan, "Horizontal Plane Detection from 3D Point Clouds of Buildings", Electronics Letters, (2012) Vol.48(13), pp.764-765.

## Projects



### Hair-GANs: Recovering 3D Hair Structure from a Single Image

2018

- We present an architecture of GANs for single-view hair modeling. Our GANs transform 2D orientation maps into 3D volumetric field which encodes both the occupancy and orientation of hair strands;
- We introduce a dimension expansion layer into the design of our generator network which converts a succession of 2D features to a single channel of 3D features;
- We optimize the generator parameters by considering both the output and the latent features of the discriminator.



### Modeling Hair from an RGB-D Camera

2018

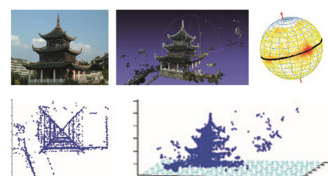
- We introduce the first high-quality and fully automatic hair modeling pipeline that generates 3D hairs closely matching the real-world inputs using a single RGB-D camera;
- We propose an efficient exemplar search method by local patch-based similarity to generate guide geometries;
- We present a 3D orientation synthesis method by 3D PatchMatch-based optimization;
- We bring forward a hair synthesis method guided by 3D nearest neighbor mapping to propagate structural plausibility from exemplar strands to the target hair model.



### A Data-driven Approach to Four-view Image-based Hair Modeling

2017

- We introduce a lightweighted, image-based hair modeling method that takes as input only four hair images at the front, back, left and right views, and produces a high-quality 3D hair model;
- We propose a data-driven mask-based matching and deformation method to construct the rough hair shape that resembles the hair mask at all input views;
- We present a novel patch-based multi-source hair texture synthesis algorithm, which enables creative hairstyle design by combining different hairstyles at different views into a consistent 3D hair model.



### Horizontal Plane Detection from 3D Point Clouds of Buildings

2012

- We introduce a simple detection method to extract directly the horizontal plane from 3D point clouds of buildings;
- We propose a 3D point normal mapping sphere for the horizontal plane estimation;
- We present a horizontal plane detection method with RANSAC algorithm by distinguishing direction point inliers from outliers.