

Qixin Deng

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Education

University of Houston	Computer Science	Ph.D	01/2018 – 05/2023
Purdue University	Electrical & Computer Engineering	M.S.	08/2015 – 05/2017
ZhengZhou University	Electronics Information Engineering	B.S.	08/2010 – 05/2014

Key Skills

Language: C/C++, C#, Python, Matlab, JavaScript

Tools: Linux, Git, OpenGL, Maya, Unity, Wrap3D, CMake, QT, Pycharm

Professional Area: Unsupervised Training, Face Reconstruction&Modeling, Animation, Computer Graphics

Research Experience

End to End 3D Face Reconstruction with Expressions and Albedos from Single In the wild Images

CGIM Lab, University of Houston, Research Assistant

Houston, TX, 05/2020 – 11/2021

- Design a deep learning based CNN model with differentiable rendering procedure to reconstruct face model from single In-the-Wild images.
- A group of hybrid loss functions are proposed to train the model. The losses aim to preserve identity (shape), constrain visual pleasure (albedo and lighting) and restore mouth expression.
- Several face related technologies are introduced into the project: face recognition network(FaceNet), face segmentation network (Unet), Face landmark detection network, face detection and alignment network (MTCNN) and Face Morphable Model.

Live Speech Driven Avatar-mediated Three-party Telepresence System: Design and Evaluation

CGIM Lab, University of Houston, Research Assistant

Houston, TX, 08/2019 – 01/2021

- Design an immersive telepresence system using Unity in shared online virtual world in which users are able to customize outlook and drive avatar via live speech in real time.
- Propose a method to generate head and eye motion in real time and use HMM and CRF to synthesis body gesture in real time.

Plausible 3D Face Wrinkle Generation Using Variational Autoencoders

CGIM Lab, University of Houston, Research Assistant

Houston, TX, 01/2019 – 01/2021

- Design a CNN model, which includes a Variational Auto-Encoder and a Supervised Network in Tensor-flow framework, trained by proposed wrinkle edge aware loss. Displacement maps can be sampled and interpolated from the Latent Space of the model.
- Design a framework to apply displacement map to face models with different topologies. An improved motion transfer scheme and adaptive subdivision are deployed.

Deep Learning-Based Model for Head and Eye Motion Generation in Three-party Conversations

CGIM Lab, University of Houston, Research Assistant

Houston, TX, 01/2018 – 04/2019

- Design a LSTM model which can synthesize realistic three-party animation by feeding live speech. The generated motions include not only body motion, but also head and eye motion.
- Apply motion controller and lip-sync technology to enrich animation results. Animation results are made by Maya software combined with V-ray and Mental ray renderers.

Work Experience

Design a Distributed Web-API for User to Reconstruct Face Model

SEED Lab, Electronic Arts, Research&Development Intern,

Austin, TX, 05/2022 – 08/2022

- Build a flask based front-end, k8s based back-end web API for user to upload and reconstruct face model from single in-the-wild image.
- Build dockers to holds web server and deep-learning model for dustributed deployment.
- On the webpage, the user is able to select deep-learning model, upload image, download results, render results and delete from database.
- Use Wrap3D to build a pipline which is able to do pre-alignment and non-rigit registration between our 3D model result and other face Rig(ex. EA FaceRig).

Teaching Experience

- COSC4370-Interactive Computer Graphics (lectures on OpenGL Programming), Fall 2022, Fall 2021, Fall 2020
- COSC6372-Computer Graphics (lectures on OpenGL Programming, Exam Review), Spring 2021, Spring 2022

Honors&Awards

Best PhD Award	Computer Science at University of Houston	2022
President Scholarship	Computer Science at University of Houston	2018
Outstanding Undergraduate Student	Education Department of Henan Province,China	2014
National Scholarship	Ministry of Education of China	2012

Publications

- [1] **Qixin Deng** Aobo Jin, Binh Huy Le, and Zhigang Deng, "End to End 3D Face Reconstruction with Expressions and Specular Albedos from Single In the wild Images". Proceeding of ACM International Conference on Multimedia (MM) 2022 (Best Conference in Multimedia)
- [2] **Qixin Deng**, Luming Ma, Aobo Jin, Huikun Bi, Binh Huy Le, and Zhigang Deng. "Plausible 3D Face Wrinkle Generation Using Variational Autoencoders."IEEE Transactions on Visualization and Computer Graphics (TVCG) 28.9 (2021): 3113-3125. (Best Journal in Computer Graphics)
- [3] Aobo Jin*, **Qixin Deng*** and Zhigang Deng, "A Live Speech Driven Avatar-mediated Three-party Telepresence System: Design and Evaluation". PRESENCE: Virtual and Augmented Reality, MIT press(2022).
- [4] Aobo Jin, **Qixin Deng**, Yuting Zhang, and Zhigang Deng. "A Deep Learning-Based Model for Head and Eye Motion Generation in Three-party Conversations." Proceeding of the ACM on Computer Graphics and Interactive Techniques (PCM-CGIT), Special Issue for ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA) 2019, July 2019, 2(2), Article 9, pp. 9:1-9:19.