

Xiaoyu CUI

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EDUCATION

Carnegie Mellon University, Entertainment Technology Center

Master of Entertainment Technology

Zhejiang University, Chu Kochen Honors College

Bachelor of Digital Media Technology

Advanced Honors Class of Engineering Education

Pittsburgh, PA

May 2021

Hangzhou, China

Jul 2019

SKILLS

Languages: C#, C++, Python, Java, JavaScript, MATLAB, SQL

Applications: Unity3D, Visual Studio, Adobe PhotoShop and Premiere, Git, Perforce, Microsoft Office

RELEVANT COURSEWORK

Computer Graphics, Computer Vision, Computer Animation, Media Signal Processing, Digital Video and Audio Processing, Data Structures and Algorithms, Discrete Math, Building Virtual Worlds

RESEARCH EXPERIENCE

State Key Lab of CAD & CG, Zhejiang University

Hangzhou, China

Research Assistant, supervised by Prof. [Xiaogang Jin](#)

Summer 2018

- Presented a novel shape-constrained fireworks simulation method with rich textures in the HMD (Helmet Mounted Display) virtual environment using sketched feature lines as input.
- Introduced a novel point sampling algorithm based on Gaussian curvatures, which not only stores the positions of the selected vertices but also the texture coordinates information for texture display.
- Introduced a multi-level explosion process based on k-means clustering algorithm so that the fireworks can dynamically form specific, visually pleasing shapes.
- The paper has been accepted for publication on *Computer Animation and Virtual Worlds*.
⇒ **Xiaoyu Cui**, Ruifan Cai, Xiangjun Tang, Zhigang Deng, and Xiaogang Jin. Sketch-based Shape-constrained Fireworks Simulation in Head Mounted Virtual Reality. *Computer Animation and Virtual Worlds*, Wiley, 2019, 30 (Accepted).

ACADEMIC PROJECT

Building Virtual Worlds, Entertainment Technology Center, Programmer

Fall 2019

- Collaborated with teams of 5 including artists, programmers, and sound designers to develop interactive and immersive experiences cycling totally 5 rounds.
- Programmed game mechanics, interfaces, and interactions with Magic Leap, Oculus, HTC Vive, and Phidgets.
- Communicated across diverse roles and made game prototypes effectively under pressure.

Magic Forest, Designer & Developer, Team leader of 4

Jul 2018 – Sep 2018

- Developed an educational music game for K-12 children to play and learn based on HTC Vive.
- Users finish songs by beating the 8 target bunnies (octaves) in the forest following the rhythm notes with splendid visual effects.
- Divided the business logic into 4 modules, including hint-ball (to cue players to hit rabbits in time), hitting state judgment, note bar judgment, and rabbit animation control with AI.

Image Completion with Structure Propagation, Independent Designer & Developer

Apr 2018 – Jun 2018

- Re-implemented the approach proposed in the paper *Image Completion with Structure Propagation* (SIGGRAPH 2005) with C++.
- User extends a few curves to specify key structure information of the image, and the structure propagation method would find the optimal patches automatically, to remedy the missed structure. Criminisi algorithm is used to fill the rest of unknown regions.
- If only a single curve is specified, structure propagation is solved using dynamic programming. When multiple intersecting curves are specified, Belief Propagation algorithm is used to find the optimal patches.