



Jack Tsung Yu Tsai

Interdisciplinary game + graphics programmer

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SKILLS

Programming

C#
C/C++
Objective-C
Python
JAVA
HLSL
CUDA
MEL
Max script
HTML5
CSS

SDK

Oculus SDK
Kinect SDK
Maya API
3ds Max SDK
V-Ray

Tools

Unity3D
3ds Max
Maya
Premier
Photoshop
After Effects
Microsoft Visual Studio
MATLAB
OpenGL
OpenCV

LANGUAGES

English
Chinese
Taiwanese

EDUCATION

- **Carnegie Mellon University** *Entertainment Technology Center (ETC)* (Pittsburgh, PA) - May 2016
(Expected)
Master of Entertainment Technology
- **National Taiwan University** (Taipei, Taiwan) - Jun. 2008
Master of Computer Science & Information Engineering
Graphics research group, Communication and Multimedia Lab
Coursework: **Computer Graphics, Real-time Rendering, Virtual Reality**
- **National Chung-Hsing University** (Taichung, Taiwan) - Jun. 2006
Bachelor of Computer Science

PROJECTS

- **Game projects of the course, "Building Virtual World" ETC, Carnegie Mellon University** (Pittsburgh, PA) Fall 2014
game designer/ artist/ co-producer
 - Experience in C#, Unity3D, Oculus Rift, PlayStation Move, Kinect, EyeGaze eye tracker
 - Game level design and Artwork of scenes and characters
 - Problem solving on motion detection in Kinect
 - Shader writing on visual effects in Unity3D
 - Game mechanism improvement through playtesting

EMPLOYMENT

- **Next Media Animation** *R&D Engineer, Media Lab* (Taipei, Taiwan) Oct. 2009-
Jul. 2014
 - **The In-house Game Engine Development**
Improved the rendering efficiency and quality using the next generation game development technologies.
 - **Mobile application development (iOS)**
Developed in Objective-C and Unity for driving avatar by facial tracking and 3d interactive animation by pattern recognition.
 - **Augmented Reality System for TV News**
Implementation by pattern recognition and tracking for the real-time interaction between the news anchor and animation.
 - **Deferred Rendering and Binary Space Partition Tree System**
Improved rendering performance and scene management of the in-house animation tools.
 - **Real-time Silhouette and Toon Shader For Cartoon Rendering in 3ds Max**
Implemented and integrated the shaders with HLSL to the V-Ray, Scanline in 3ds Max to boost the rendering performance.
 - **The Facial Expression System, aHEAD**
Developed to simulate realistic facial animation for different facial models from facial motion capture data. This system has been applied to production pipeline.
 - **Facial and Body Rigging Panel in Maya**
Designed for rigging and implemented in Maya API.

RESEARCH EXPERIENCES

- **"Drawing Together"** *Night Market Workshop (Media Lab, MIT)* Aug. 2008
Tracking GPS devices' route by Python and projected on the building to interact with strangers.
- **"Flag-Flag Revolution" (self-made Wii game)** *Term project of Virtual Reality* Jun. 2007
Designed a video game with Wii remote controllers connected to PC via Bluetooth. Players make the controllers as flags to the right position when hearing the audio command.