Jiechang Guo

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Education

University of Houston — Houston, TX
Master of Science in Computer Science and Technology — 08/2022 – 05/2024(expected)
Hangzhou Dianzi University — Hangzhou, China
Master of Science in Digital Media Technology — 09/2015 – 04/2018
Jiaxing University — Jiaxing, China
Bachelor of Science in Computer Science — 09/2011 – 06/2015

Technical Skills

Languages: C/C++, C#, Python
Tools: OpenGL, Unity3D, OpenSceneGraph, GLSL, HLSL, OpenCV, PyTorch, TensorFlow, glm, Eigen, Fbx Sdk, ImGui, PyQt, SMPL, VRTK, VTK, Git, SVN, Cmake, anaconda, Linux
Keywords: Computer Graphics, Animation, Rendering, Virtual Reality, Augment Reality, Computer Vision, Visualization, Machine Learning, Deep Learning

Work Experience

ArcSoft Corporation Limited — Hangzhou, China
3D Graphics Software Engineer — 04/2018 – 07/2021

Real-Time Body Tracking and Motion Retargeting
- Developed C/C++ SDKs to calculate animation from 3D points and retarget to 3D characters. Implemented pose smooth filters, prevented mesh penetration, and simulated hair animation for realistic effects
- Built testbed using OpenGL, quantitative test tool for QA teams using Python, animation effects edit tool for UX teams, annotating training data tools, and real-time demo using Unity3D
- **SDKs were integrated into the Samsung Galaxy series**, and provided on-site support for Samsung in South Korea

Auto Joint Binding and Animation
- Developed C/C++ SDK for rigging and skinning 3D scanned model, and retargeting humanoid animation
- Developed testbed using OpenGL, **SDK was integrated into Samsung Note 10**

Real-time AR Depth Map Interaction Application
- Developed Unity3D mobile application integrated with AR SDK for processing raw depth map
- Generated AR features using HLSL shader including 3D cursor, real-time depth mesh generation, hit test, and occlusion

Skeleton Animation Projects
- Developed animation-driven C++ SDK, animation previewer using Fbx SDK and OpenGL to export character animations
- Developed animation module of the graphic engine, including blend tree and animator state machine features

Projects

Research on Butterfly Pose Estimation and Animation — 01/2023 – 05/2023
- Synthetic butterfly 2D pose training data using physic simulation
- Fine-tuned YOLOv8 pose model on synthetic training data to estimate 2D pose

Computer Vision Course Projects — 01/2023 – 05/2023
- Applied transfer learning technique on a pre-trained ResNet50 CNN model to perform classification for recognizing images of horses and camels using TensorFlow
- Built a CNN model from scratch to detect handwritten digits with CNN using PyTorch and TensorFlow
- Trained a Convolutional Autoencoder using TensorFlow for anomaly detection on flowers.
- Face detection in large distances using fine-tuned YOLOv8, experimentally added Transformer layers and utilized Super Resolution on blurred faces.

Natural Language Processing Course Projects | *at UH* — 08/2022 – 12/2022
- Applied text representation techniques and Logistic Regression model to classify informative/uninformative English tweets using Scikit-learn and PyTorch
- Implemented sequence tagging architectures for named entities recognition (NER) task using conditional random field model
- Applied BERT model for multiword expressions detection, supersense tags prediction, and NER task

Visualization Course Projects — 08/2022 – 12/2022
- Information data visualization using Pandas, Matplotlib
- Scientific data visualization using VTK, PyQt for 2D, 3D scalar field and steady vector field
- Developed direct volume rendering application in VR on Oculus Quest2 using Unity3D

User Interface Research on Interactive Technology of 3D Models — 10/2016 – 02/2018
- Designed and developed 3D interaction for the 3D model in virtual space via HTC Vive Controllers, Tracker, and 2D multi-touch-based large display, compared with the traditional mouse and keyboard input
- Performed user study, published paper, and gave a presentation at the University of Bournemouth in the UK