BIYUN LYU

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EDUCATION

New York University — New York, United States

Computer Engineering/Master of Science — Sept.2023- May.2025

- Main Courses: ***Data Structure and Algorithm, Machine Learning***, *Computing Systems Architecture, Internet Architecture and Protocols, Probability and Stochastic Processes, Introduction to System Engineering*

Shanghai University — Shanghai, China

Digital Media Technology/Bachelor of Science — Sept.2019 - Jun.2023

- Main Courses: ***Data Structure, Object-oriented Programming(C#), Computer Graphics, Computer vision, Game Development (C#)***, *Computer Animation Design and Production, Game Design, Introduction to Film Technology*

PERSONAL SKLLS

- C++, C#, Python, OpenCV, OpenGL, HLSL, VR/AR development, Unity, Unreal Engine, Substance Designer, Maya, Blender, Substance Painter, Photoshop, After Effect, Nuke, etc.

INTERNSHIP EXPERIENCES

DeNA Co., Ltd. — Shanghai, China

Mobile App Development Intern, Game Tech Center — Jul. 2022 - May.2023

- Completed **shaders in Unity** including stencil test, toon shaders, and advanced computer graphics techniques such as subsurface scattering, slime effect, and water rendering using **CG and HLSL**.
- Participated in the **UI development** of game projects in Unity using **C#**. Developed a skill tree interface for a project *Dragon Quest: The Adventure of Dai*.
- Investigate **AIGC technologies**(Stable Diffusion and Midjourney). **Deployed Stable Diffusion on AWS**, researched AIGC principles and functionality, trained over 5 LoRA models for company projects.
- Conducted benchmark tests on 5 different smartphone models to assess graphics rendering, CPU performance, and power efficiency of various SoCs. Provided data to optimize game performance across different mobile devices, achieving up to 25% improvement in frame rates.

51WORLD Digital Twin Technology Co., Ltd. — Shanghai, China

Technical Artist Intern, Technical Art Department — Mar. 2022 - Jun. 2022

- Participated in the production process of virtual humans, assisting with facial capture and mapping techniques using UE5's **animation system** to achieve more realistic digital characters.
- Created building assets and procedural maps using **Maya, Substance Designer, and Houdini**, understanding and successfully implementing the process of procedural modeling and texturing.
- Developed shaders in **Unreal Engine**, including parallax window shaders, using the **PBR** workflow in UE5.
- Optimized scenes and assets to enhance performance and visual quality, such as reducing the number of triangles and optimizing the creation of digital twins.

PROJECT EXPERIENCES

Design and Implementation of Human Motion Capture System Based on Monocular Vision — Shanghai, China

Supervisor: Bing Yu — Feb. 2023 - Jun. 2023

- Developed UI interfaces and core functionalities using **Unity on Apple mobile** devices, ensuring a user-friendly experience and robust performance.
- Utilized **ARKit** for facial expression capture and analysis, enhancing the realism of virtual characters, resulting in a 43% increase in facial expression accuracy.
- Implemented real-time hand and body pose estimation using the MediaPipe framework, integrating **OpenCV** to enhance image processing and feature detection capabilities, achieving an 8% accuracy rate in pose detection.
- Developed a live streaming feature to broadcast real-time motion capture data and virtual character interactions, utilizing **streaming protocols and server configurations** for optimal performance, reducing latency by 30%.
- Designed and created virtual characters using Vroid Studio and Unity, incorporating advanced animation techniques to ensure realistic movements and interactions, backed by AI-enhanced motion data.

Development of VR Tea Making System: Jin Cha Ru Yi — Shanghai, China

Supervisor: Zhifeng Xie — Jan. 2023 - Feb. 2023

- Planned the overall scheme for the project and used Houdini to generate terrain.
- Constructed and rendered the scene, and developed the dialogue system and the backpack system.
- Packaged and integrated the game into **VR** devices (HTC Vive), increasing the project's usability.