National Yang Ming Chiao Tung University Computer Science and Engineering Projects

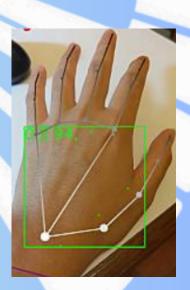
林郁峻 黃暄富 周庭右

- Real-time	Interactive	AR/VR	Piano
- NCAI-IIIIC	HILEL ACLIVE	;	I IAIIU

PROJECT GOAL

The goal of our project is to create an innovative piano teaching platform that includes Augmented Reality (AR), Virtual Reality(VR) technology, and real-time interaction over a network.

Through the integration of VR, we aim to provide users with a remote piano learning experience where they can visualize and interact with a 3D representation of the piano keys, guided by a teacher in a different location.



OPERATIONAL ARCHITECTURE

The platform will utilize a Recording Client to capture and process finger movements on a physical piano or a paper piano, transmit the data over a network, and present the information in real-time on the AR/VR Client through Unity and VR glasses.

Recording Client

Captures and processes finger movements on a physical or paper piano.

Server

Converted data from the Recording Client to the AR Client.

AR/VR Client

TCP Connect

TCP Connect

TCP Reply Udp port

TCP Reply Udp port

Udp Connect

TCP OK

Udp Data

TCP Connect

TCP Connect

TCP Connect

TCP Connect

TCP Connect

TCP Connect

Udp Data

Flowchart

Positions virtual piano keys in the augmented reality space based on received data.

Modifies the positions of the 3D models in real-time within the Unity environment to align with the physical piano keys or a paper piano.