Tse-Hou Hung

Contact Information

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Educations

2019 – Present **National Tsing Hua University (NTHU), Taiwan**, *Master program in Information Systems and Applications*
Thesis Topic: 6-DoF Immersive Video streaming to Head-Mounted Display
Advisor: Prof. Cheng-Hsin Hsu
Accumulated GPA: 4.03/4.3

2015 – 2019 **Chung Shan Medical University (CSMU), Taiwan**, *Bachelor degree in Health Policy and Management*

Research Interests

Multimedia Networking, Augmented Reality, and Virtual Reality

Publication

T. Hung, C. Hsu and C. Hsu Optimizing Immersive Video Streaming Using Deep Learning Approaches: A Case Study on TMIV Submitted to the ACM International Conference on Multimedia (MM'20), Seattle, United States, October 2020.

Working Experience

September 2019 – Present Research Assistant, Networking and Multimedia System Lab, Department of Computer Science, NTHU

March 2020 – Present Assistant System Administrator, Computer and Communication Center, NTHU

Research Experience

6-DoF Immersive Video Streaming, *(Supported by the MOST Project: Teleporting Through Space Across Time Using Head-Mounted Displays: A Case Study for Real Estate)*
Virtual Reality (VR) has become increasingly more popular in various business sectors. The modern VR systems that support six-degree-of-freedom (6-DoF) can provide more immersive experience, in which Head-Mounted-Display (HMD) user's viewport can be changed according to his/her position and orientation. However, because of the tremendous content size, 6-DoF immersive video streaming dictates too much bandwidth and computing resources. In this work, we propose a configuration optimizer that uses Reinforcement Learning (RL) and Convolutional Neural Network (CNN) to select the best configuration setting. Trough real experiments, we show that our solution reduces the bandwidth and computing resource consumption while delivering good video quality.

Machine Learning Platform, *(Supported by the UMC Project: Development for AI Related Edge and Infrastructure)*

Machine Learning (ML) has been around for decades and is now commonly used in many fields. In recent years, more and more people and companies try to use ML techniques to achieve or improve their productibility. However, capitalizing the potential of ML needs a lot of domain knowledge, along with tons of tuning for the best performance. Furthermore, ML applications are not done after a model is trained. This is because the trained models may become outdated in the future, due to the drifts of concepts. Therefore, after deploying an ML model, we still need to monitor its performance and retrain whenever necessary. To allow the ML developers to focus on their work, we need an ML platform that can automate the routine tasks. In this project, we build such an ML platform, which consists of various tools to speed up data preparation, model building, service serving and monitoring of multiple ML applications. We survey the existing platforms and generalize their components and functions. This leads to a general ML platform design that can be adopted in diverse scenarios. To demonstrate the practicality and efficiency of our design, we build a real testbed based on several open-source projects like Kubeflow. We use the testbed to conduct a case study, which results in a few new research problems, which were not solved in the literature. We are currently solving these problems jointly with UMC colleagues.