Tse-Hou Hung

Objective

First year PhD student in ISA@NTHU. Persistent, hard-working, and pursuing the sense of accomplishment. Looking for internship opportunities to learn and explore knowledge about my research interests.

Contact Information

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Research Interests

Multimedia Networking, Augmented Reality, and Virtual Reality

Educations

2020 – Present **National Tsing Hua University (NTHU), Taiwan** *PhD program in Information Systems and Applications*
Thesis Topic: 6-DoF Immersive Video Streaming to Head-Mounted Display
Advisor: Prof. Cheng-Hsin Hsu

2019 – 2020 **National Tsing Hua University (NTHU), Taiwan** *Master program in Information Systems and Applications, Transferred into PhD program in summer 2020.*
GPA: 4.03/4.3

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

Technical Skills

Languages C/C++, Python, LaTeX, Shell Script Programming, Matlab
Experienced Unity, CUDA, Socket Programming, DASH, MySQL

Publications

T. Hung, C. Hsu and C. Hsu, Optimizing Immersive Video Streaming Using Deep Learning Approaches: A Case Study on TMIV, Plan to submit to ACM Transactions on Multimedia Computing, Communications, and Applications.

C. Fan, **T. Hung** and C. Hsu, Modeling the User Experience ofWatching 360° Videos with Head-Mounted Displays, Submitted to ACM Transactions on Multimedia Computing, Communications, and Applications.

Honors and Awards

2020 President Scholarship, 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. Through 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 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 it whenever necessary. To allow the ML developers to focus on analysis, 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 performance 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, that were not solved in the literature. We are currently solving these problems jointly with the UMC colleagues.

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