Chia-Ying Hsieh

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Educations

2020 – Present **National Tsing Hua University (NTHU), Taiwan**, *Master program in Computer Science*, Thesis Topic: , Advisor: Cheng-Hsin Hsu.
GPA: /4.3

2016 – 2020 **National Tsing Hua University (NTHU), Taiwan**, *Bachelor of Science in Computer Science*.
GPA: 3.76/4.3

Research Interests

Internet-of-Things, fog computing, edge computing, federated learning, distributed systems, and multimedia systems.

Publications

Demo papers

C. Hsieh, Y. Li, C.Hsu, Y.Kuo, C. Chen, C. Hsu, and J. Sheu *Stream Processing of Software-Defined Video Analytics on a Smart Campus. in Proc. of IEEE International Conference on Big Data Intelligence and Computing (DataCom'19), Demo Session*, Kaohsiung, Taiwan, October 2019.

Honors and Awards

2018 **Summer Cross-Strait Academic Exchange Scholarship, NTHU**

Working Experience

September 2018 – Present Research Assistant, Networking and Multimedia Systems Lab, Department of Computer Science, NTHU

July 2019 – August 2019 Customer Service Website Extension Specialist, Decathlon

Research Experience

Streaming Processing of Software-defined Video Analytics.
The demand for real-time video analytics is increasing due to the prosperity of surveillance cameras in smart spaces. In this extended abstract, we present our stream processing platform to dynamically deploy, manage, and upgrade softwaredefined video analytics. Our key innovation is to divide a smart space into multiple Internet-of-Things (IoT) zones. Each zone consists of a set of geo-collocated IoT devices, heterogeneous networks, and edge servers. By creating a hierarchical architecture of IoT zones, our distributed platform achieves better scalability and flexibility. We implement our stream processing platform using a set of opensource projects. We deploy it on a real testbed of eight smart street lamps on our campus, in which four surveillance cameras stream live videos to an edge server. The edge server runs multiple video analytics following the user demands, and the analytics results are stored in a time-series database for future usage.

Reusing Intermediate Analytics Results.
We found that some analytics results can be utilized by multiple requests, thus caching these results may be a good idea to reduce the execution time of the requests. However, due to the limitation of the resources at the edge side, we need to carefully decide which results to the cache. At the same time, we want to expolit all the residue resources to maximize the resource usage. Therefore, we try to predict some requests, the requests contain useful analytics will obtain higher priority.