Tse-Jui (Raymond) Huang

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Education

Purdue University IN, United States
Master of Science in Computer Science *Fall 2021 – Present*

University of Illinois Urbana-Champaign (UIUC) IL, United States
Exchange Program in Computer Science *Spring 2020*

- **Overall GPA**: 3.86/4.0
- **Relevant courses**: Operating System Design | Data Mining | Artificial Intelligence | Audio Computing (**all** cross-listed with **graduate-level** courses)

National Chiao Tung University (NCTU, Top 2 University in Taiwan) Hsinchu, Taiwan
Bachelor of Science in Computer Science *Sep. 2016 – June 2020*

- **Overall GPA**: 3.88/4.3 (Last 60: 4.06/4.3)
- **Honors & Awards**: **2nd** place over **25** teams in Graduation Project Contest | Foreign Exchange Scholarship
- **Outperformed Graduate-Level Courses**: Parallel Programming | Network Programming | Wireless Network | Software Defined Networks & Network Function Virtualization **(all A+)**

Publication

Yi-Bing Lin, **Tse-Jui Huang**, Shi-Chun Tsai "Enhancing 5G/IoT Transport Security Through Content Permutation" *IEEE Access*, Vol. 7. pp 94293 - 94299, July. 2019

Research Experience

Line Rate Symmetric-Key Algorithm for SDN P4 Switches Hsinchu, Taiwan
Advisor: Lifetime Chair Prof. Yi-Bing Lin *Fall 2018 – Spring 2019*

- **Pioneered** in implementing cipher permutation algorithms on Intel P4 Switches
- Achieved **10x faster** than prevalent x86 servers running the algorithm with the same key length
- Awarded **2nd place over 25 competitors** with personal achievement in Graduation Project Contest in NCTU
- **Published** in *IEEE Access*

Work Experience

NCTU MicroInfo Research Center Hsinchu, Taiwan
Software Defined Network Research Assistant *July 2020 – Dec 2020*

- Further **enhanced 33%** performance while **reduced 50%** hardware resources by optimizing cipher permutation algorithms on P4 switches
- Improved academic writing skills such as mathematical proof

Industrial Technology Research Institute Hsinchu, Taiwan
Wireless Research Intern *Aug 2019 – Dec 2019*

- Acquired biomedical signals by analyzing Wi-Fi Channel Statement Information from ESP32 micro-controllers
- Troubleshot the experimental products deployed in Tri-Service General Hospital

Leadership

Team Leader of **Mei-Chu Hackathon Competition** *Fall 2019*

- Awarded **1st place** over 7 teams in Logitech Category
- Developed plugins to significantly accelerated sheet musics composition with dial-equipped Logitech keyboard

Director of **NCTU Chinese Orchestra Club** *August 2017 – July 2018*

- Led a **50-people** orchestra to won **2nd place** in National Student's Music Competition
- Awarded the **highest ranking** in annual club evaluation and won **double club subsidy** for the succeeding year

Co-Chair of **Phoenix Model United Nations** (Largest MUN in Southern Taiwan) *Feb 2017*

- Hosted a 50-people conference to discuss international disarmament and led the committee agenda

Selected Course/Side Projects

Music-Synced Light Strip | Python, Audio Computing, Raspberry PI, WS2812B LED *Spring 2021*

- Developed the bass detector with filters and mfcc to allow light strip change color with music tempo
- Implemented developer-friendly APIs and hierarchical system architecture to control LED colors more efficiently

Rate-Monotonic CPU scheduler | Linux Kernel API, C *Spring 2020*

- Constructed a kernel module that overrides Linux kernel's scheduling policy to prevent context switching on real-time process and fulfill fixed-time constraints
- Utilized kthreads, proc files, and kernel timers to manipulate the OS behavior

Secret Indoor Tracking System | ESP32, Wi-Fi RSSI, MediaTek Cloud Sandbox, C *Fall 2019*

- Built a system to track user devices' indoor position by measuring devices' Wi-Fi RSSI
- Camouflaged the whole system as a regular Wi-Fi AP
- Covertly start tracking when the device connects to the system

Session-sharing Remote Shell | Mutex, Semaphore, FIFO, Pipe, C++ *Fall 2019*

- Developed pipe-sharing shell server and message features with several concurrent and synchronization primitives such as named pipes, signals, semaphores, mutex, and share memory
- Allowed different user session to share their standard input/output via pipe-sharing mechanism

VLAN Tag Segment Routing | ONOS, Mininet, Java *Spring 2019*

- Utilized VLAN tag as segment ID and developed DHCP unicast, Proxy ARP, and load balancing features to form a complete ONOS SDN controller application
- Allowed network administrators or load balancer to fully control the route of each traffic flow in the network

LogisTalk | IotTalk Platform, Linebot, Android, SQL *Spring 2019*

- Developed a full-stack IoT logistic solution similiar to *Uber Eats* with IotTalk platform, android app, Linebots, and web application for clients, delivery men, and backend administrators

AWS-based Instant Messenger | AWS Boto3, Peewee ORM, Python *Fall 2018*

- Implemented a chatting system with Amazon Web Services such as EC2 and RDS
- Balanced the workload by dynamically arranging different number of running instances

Paralleled Universal Random Forest Classifier for UCI Datasets | OpenMP, MPI, Modern C++ *Fall 2018*

- Implemented a classifier which automatically detects number of features and labels in datasets
- Utilized OpenMP and MPI to multiply the classifier performance

NCTU Chinese Orchestra Club Assistant | Java, PHP, SQL *Summer 2018*

- Developed an android app with MySQL and Firebase for rehearsal room reservation, club bulletin and chatroom
- Successfully increased club members' interactions and enhanced club managements

Technical Skills

Programming Languages: C/C++, Python, Java, P4 languages, SQL, Shell Script

Tools & Libraries: Linux Kernel/System API, CUDA, MPI, OpenCL, Wi-Fi CSI

Platforms: ONOS, IotTalk, MySQL, Google Firebase, AWS, Arduino, Git

Others

Languages: Mandarin (native), English (fluent)

Interests: Music performance (Erhu, Piano, Violin), Photography