

# Alfons Hwu

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## Research Interests

Deep Learning, Security, Performance, Parallel/GPU Programming and System Optimization. (In no particular order)

## Education

### National Chiao Tung University

*Hsinchu, Taiwan*

B.S. IN COMPUTER SCIENCE

*Sep. 2015 - Jun. 2019*

- Graduation Project Advisor: Kwan-Wen Chen, Ph. D.
- Overall GPA: 3.83/4.0, Last 60: 3.93/4.0, Major: 3.91/4.0, Rank: 28/221 (Top12.6%)

### National Taiwan University

*Taipei, Taiwan*

M.S.-STUDENT IN COMPUTER SCIENCE AND INFORMATION ENGINEERING

*Sep. 2019 - Present*

- Performance, Application and Security Lab (CSIE504). This lab mainly focus on High Performance Computation and System Optimization. [Click here for homepage.](#)
- Thesis direction: NVIDIA CUDA, GPU-related topic for HPC system optimization. Advisor: Shih-Hao Hung, Ph. D.
- Current GPA: 4.18/4.30, Rank: 27/158

## Experience

### MediaTek

*Hsinchu, Taiwan*

SOFTWARE ENGINEERING INTERN

*Jun. 2018 - Aug. 2018*

- Multimedia algorithm development engineer internship.
- Working on porting the image processing algorithm from high-level C++ to low-level embedded C, optimizing and writing analytical reports

### Cadence Design Systems

*Hsinchu, Taiwan*

SOFTWARE ENGINEERING INTERN

*Jul. 2020 - Sep. 2020*

- Develop an algorithm to optimize part of the circuit simulation database size.
- Up to 16% space of such part is compressed, and without any deteriorate in run-time in spite of the additional compression algorithm.
- Work with SVG-TW team to do software regression and version control together.

## Awards & Honors

### CURRICULAR

#### Gold Prize. Role as Team Leader

*Taipei, Taiwan*

HACKNTU 2016

*Aug 21. 2016*

- An eye-care sensor, which notifies user to set a period to rest, preventing myopia, along with some game-like feature to make it more interesting.
- As a team leader, my tasks are to properly distribute the work to members, convene discussions, ignite ideas, testing, and finally present a briefing.
- [Click here for the onstage presentation by me.](#)

#### Two-time V-AWARD

*Hsinchu, Taiwan*

MEDIA TEK TAIWAN

*Aug. 2018*

- A monthly employee performance award by the Senior Department Manager and the Director.
- The analytical report is helpful to the department, which helps boosting the industrial-grade syntax checking and code deployment.

#### Dean's List

*Hsinchu, Taiwan*

NATIONAL CHIAO TUNG UNIVERSITY

*Fall. 2018*

- Ranked 3/69 throughout the (sub)class, with avg. being 92.25/100

#### AIS3 EOF CTF Finalist

*Taipei, Taiwan*

INFORMATION SECURITY INCUBATION PROGRAM, MINISTRY OF EDUCATION

*February. 2020*

- Ranked 21/82 in the preliminary round, advanced to national final
- [Click here for homepage, Writeup](#)

### EXTRACURRICULAR

Sep. 2016 **4th in 400m Freestyle**, Mayor Cup Swimming Competition, University Group  
 May. 2017 **1st in 200m Freestyle Relay**, Annual Swimming Competition, National Chiao Tung University  
 May. 2018 **1st in 200m Medley Relay**, Annual Swimming Competition, National Chiao Tung University  
 May. 2018 **1st in 200m Freestyle Relay**, Annual Swimming Competition, National Chiao Tung University  
 May. 2019 **2nd in 50m Butterfly**, Annual Swimming Competition, National Chiao Tung University

*Hsinchu, Taiwan*  
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## Extracurricular Activities

### Swimming Varsity Member

NATIONAL CHIAO TUNG UNIVERSITY

- Participated in two inter-collegiate swimming competitions.

*Hsinchu, Taiwan*

Sep. 2015 - Sep. 2016

### Two-Time General Coordinator of Smart Transportation Hackathon

NATIONAL CHIAO TUNG UNIVERSITY

- Co-organize with my advisor, Prof. Kuan-Wen Chen aka (ITCIC 2018)
- Supervisory authorities: Dept of Information Technology, Ministry of Education, Taiwan
- Click here for homepage

*Hsinchu, Taiwan*

Jul. 2018 and Jan. 2019

### Piano Club Member and Concert Photographer

NATIONAL CHIAO TUNG UNIVERSITY

- Click here for performance video

*Hsinchu, Taiwan*

Sep. 2016 - Jun. 2019

### MEDShark Swimming Club Captain

NATIONAL TAIWAN UNIVERSITY

- An amateur swimming club based on medical school in NTU.
- Teach swimming skills for the newcomers.

*Taipei, Taiwan*

Sep. 2019 - Present

## Selected Projects

### Ping Pong Battle with FPGA

DIGITAL LAB COURSE ON SOPHOMORE YEAR

- Implement table tennis game with Verilog on XILINX FPGA, IO with PS/2 Keyboard and graphic with VGA. Featuring simple battle AI, cheat mode and smash like real tennis
- Demo video link, Source code link

*Hsinchu, Taiwan*

Jan. 2017

### AURA RGB Light

ARM STM32 EMBEDDED LAB ON JUNIOR YEAR

- Embedded-like C, and burn into ARM STM32 board to implement a dynamic, fully-customizable RGB ambient light similar to that of gaming keyboards.
- Understanding the embedded ARM system programming, simple circuit, ADC, and PWM signal control.
- Demo video

*Hsinchu, Taiwan*

Dec. 2017 - Jan. 2018

### Gaussian Blur Paralleled Acceleration

PARALLEL PROGRAMMING ON SENIOR YEAR

- Accelerate the Gaussian Blur with NVIDIA CUDA framework. 935 times faster on GTX1070 vs i5 7500
- GitHub repo, Report

*Hsinchu, Taiwan*

Dec. 2018

### Multi-Player Cooperative VR Game

GRADUATION PROJECT IN NATIONAL CHIAO TUNG UNIVERSITY

- Computer vision-aided multiplayer real-time VR cooperative gaming using Kinect, Unity and VIVE.
- Best project award in Graduation Project Competition of National Chiao Tung University
- Demo video, Presentation video

*Hsinchu, Taiwan*

Sep. 2018 - Dec. 2018

## Skills

### Programming Languages

C, C++, Python, Shell Script, Makefile, MySQL, Verilog, GNU Debugger

### Frameworks

ML: PyTorch, OpenCV. Parallel: CUDA, nsys, nsight, OpenCL, OpenMP Security: Pwntools

### OS

Linux, macOS, Windows(including WSL)

### Others

Windows Office /  $\LaTeX$  / macOS iWork, Adobe Premiere / Photoshop, Amateur Photography, Swimming-Coach License

### Natural Languages

Chinese (Native), English (TOEIC 925/990, TOEFL 102/120), Japanese (JLPT N3)

## Miscs

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