

# KAI CHIEH LIU

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## EDUCATION

**Carnegie Mellon University, Entertainment Technology Center**

M.E.T in Computer Science

Pittsburgh  
(E)May 2017

**National Chiao-Tung University**

Bachelor of Computer Science(Major GPA 3.92/4.0)

Taiwan  
June 2013

### **Relevant Courses**

Data structure, Algorithm, Grad AI, System Administration, Parallel Programming, Mobile App Project, ASM Programming, FPGA design, Compiler Design, OS, Microprocessor System, Embedded System

## ACADEMIC PROJECT

**Universal GIS Map Learning tool, ETC, Programmer (React, D3.js, Webpack)** CMU, Pittsburgh, Jan. 2016

- Designed a learning tool to help student get a better understanding of map design.
- Cooperated with Professor Kristen Kurland, who teaches ArcGIS course in CMU Heinz college.
- Implemented with ReactJS, Webpack, Flux as frontend; LAMP as backend.

**2048 Game Solver (AI, MCTS, Expected Max, Java)**

CMU, Pittsburgh, Apr. 2016

- Final project of Graduated Artificial Intelligence class (15780).
- Implemented a 2048 gameboard and the control interface.
- Designed 2048 solvers by using Monte Carlo Tree Search and Expected Max Search.

**Building Virtual World, ETC, Programmer (Unity3D, Arduino, Oculus Rift)**

CMU, Pittsburgh, Sept. 2015

- Built games using different platforms, every two weeks, with random teams.
- Experienced on Oculus Rift, Leap Motion, Kinect, arduino and Makey Makey.
- Redesigned Leap Motion's grabbing mechanism customized for the project.
- Improved the Makey's firmware to raise its simultaneous input limit.

**Android TV controller (Android app)**

NCTU, Taiwan, June 2012

- Controlled all kinds of TV by just plugging in the sender and opening the app.
- Designed an Android app, a signal recorder and a Plug and Play(PnP) IR sender.
- Won the Best App prize at final project contest in Mobile App course out of 22 teams.

## PERSONAL PROJECT & Research

**Spatial Clustering of Household Appliances using NILM Smart Grid**

NCTU, Taiwan, Jan. 2014

- Designed a spatial classification algorithm for appliances using Nonintrusive Load Monitoring(NILM) smart grid.
- Combined K-means and Apriori algorithm to prevent customized training process.
- Reached 88.95% accuracy from nine authentic houses within three days of analysis.

**Energy Management System based on NILM Smart Grid (SmartHome, IOS)**

NCTU, Taiwan, Sept. 2012

- Designed a system with a team of three, that detects user behavior and activities based on NILM smart grid.
- Controlled and monitored household appliances by one click with the App on iPad.
- Implemented a behavior detecting algorithm to recognize user activities and estimate the power consumption.

## HONORS

**National Network Communication Software & Creative Applications Contest**

Nov. 2012

2nd Prize, Ministry of Education, Taiwan

**Creative Website Design Contest**

Apr. 2010

3rd Prize, NCTU & NTHU, Taiwan

## SKILLS

C#, C, C++, Obj-C, Python, Java, MySQL, PHP, JavaScript  
Unity3D, Bash, LAMP, WAMP, Perforce, Arduino, Verilog, CUDA

## SPECIAL EXPERIENCE

- Car Mechanic apprentice, Tour Leader at Princess Cruise, NCTU Swim Team