

CHUNG YI KAO

backman.only@gmail.com <https://github.com/backman-git>

SUMMARY

A technophile with the passion of using computer science knowledge to improve the quality of work and life.

SKILL

- iOS and android app development: java, swift, Objective-C
- full-stack development: node.js, javaScript, SQL, MongoDB
- Keras machine learning framework: Python

EXPERIENCE

Mandatory Service

Sept. 2016 - July 2017

Emergency Services Command Center Engineer

Yulin, Taiwan

- Implement the voice-typing system integrated into emergency command system.(100s to 20s)
- Implement a human resource assistant ERP system and login App.(3 days to 1 day)
- Implement a hacking CAPTCHA program.

Mstar Semiconductor

Jan. 2016 - Sept. 2016

Senior Software Engineer

Hsinchu, Taiwan

- Develop Android system stack of smart TV (Binder, service)
- Implement electronic program guide application.
- Implement an automatic tool for multi-language translation
(Improve developing efficiency: 5hs to 1s)
- Implement logger.(Increase debugging efficiency 10mins to 5s)
- UML code injection.(runtime sequence diagram for debugging purpose)

Industrial Technology Research Institute

July 2013 - Sept. 2015

iOS Development Engineer (Intern)

Hsinchu, Taiwan

- Implement iOS monitor application, logging system, backend System.
- Recognition algorithm of Anti-Theft.

KerjaDulu

Nov. 2014 - July 2015

Android Development Engineer(part-time)

Taipei, Taiwan

- [KerjaDulu Human Resource App](#): Project Starter, OOP Design, UI effect, SQLite, RESTful API

Campus library

Nov. 2010 - July 2013

MIS engineer of library services (part-time)

Chaiyi, Taiwan

- Implement Book Finder Android App to search books
- Implement assistant tools of library services
- Maintain Library Services and System server

HONORS AND AWARDS

Qualcomm award in [MobileHeros](#), [Book Finder](#)

2012

Excellent work in [ICT Innovative Services](#), [Touch Projector](#)

2012

EDUCATION

Master of Computer Science, National Tsing Hua University, Taiwan.

Sept. 2015

PROJECT

- Smart Leave System (Alternative Military Service) 2017
- EcoSim: A Smartphone-Based Sensor-Node Simulator with Native Sensor and Protocol-Stack Emulation
- Smart Insulating Container with Anti-Theft Features by M2M Tracking
- Touch projector
- Book Finder (Indoor location service of library)
- Gesture recognition with IoT platform based on triaxial acceleration
- use Machine Learning to hack CAPTCHA
- Voice Recognition and Correction (ED algorithm)
- Make Desktop touchable with the cheap webcam
- Self-propelled Car

References provided upon request

Project Report

Projects

Smart Insulating Container with Anti-Theft Features by M2M Tracking 2014

- **Contribution:**
 - Design a lightweight algorithm of detection about status of container on RTOS embedded platforms.
 - Develop an iOS client-side logistic app.(Logistics flow, Bluetooth 4.0 Communication mechanism)
 - Backend system (node.js)
- **Technology skills:** iOS, embedded C, algorithm.
- **Paper:** <http://www.ece.uci.edu/~chou/pdf/chou-ithings14container2.pdf>
- **Description:**

a smart insulating shipping container with anti-theft features based on M2M communication for mutual tracking. The container includes a wireless sensor node for sensing the temperature and moisture of the interior of the container as well as the vibration and orientation to ensure integrity of the contents.

Touch projector 2012

- **Contribution:** Design a vision algorithm of multiple fingertips detection.
- **Technology skills:** Vision algorithm, OpenCV, Visual C++, .NET framework.
- **Youtube:** <https://www.youtube.com/watch?v=nt4eUAXqXyk>
- **Description:**

Touch projector enables the projection to be touchable.

Book Finder (Indoor location service of library) 2012

- **Contribution:**
 - Design an AR feature, (without third party library)
 - UI and MVC implementation
- **Technology skills:** Android, Java
- **Youtube:** https://www.youtube.com/watch?v=BvLKtrgg_yw
- **Description:**

Using an Indoor location system, and Augmented Reality technology, Book Finder app guides users to where the book is located.

Personal Pet Projects

Smart Leave System

(Alternative Military Service) 2017

- **Technology skills:** Node.js, MongoDB .CoffeeScript, android, QRCode
- **Youtube:** https://www.youtube.com/watch?v=H-oOH0-n7_4
- **Description:**

The smart leave system is an ERP system for human resource office. It uses the QRCode as a method to Identify personal ID and make the usage of the system easier and more intuition.

EcoSim: A Smartphone-Based Sensor-Node Simulator with Native Sensor and Protocol-Stack Emulation 2015

- **Technology skills:** iOS, Object-C
- **Youtube:** <https://www.youtube.com/watch?v=1UUcqf0pjM0>
- **Paper:** <http://140.113.39.130/cgi-bin/gs32/hugsweb.cgi?o=dnthucdr&s=%22GH02102062590%22.id.&>
- **Description:**

The contribution of this work is a new kind of development tool support for an IoT platform. It enables developers to write code, compile using an open-source compiler, and execute it on a conventional smartphones to emulate not only the MCU but also peripheral devices. It does not require developers to actually buy and run the code on the actual embedded systems, which may be realistic but can also be more difficult due to low-level problems such as hardware errors.

Gesture recognition with IoT platform based on triaxial acceleration 2015

- **Technology skills:** machine learning, python, embedded C
- **Youtube:** <https://www.youtube.com/watch?v=VInyJABrmPo>
- **Description:**

Gesture recognition by machine learning, computer can recognize the gesture by holding the small IoT platform.

Voice Recognition and Correction (ED algorithm)

2017

- **Contribution:** It helps speed up the process of response to emergency calls.
- **Technology skills:** Voice Recognition,edit distance Algorithm
- **Youtube:** <https://www.youtube.com/watch?v=xZo-bpWrYIk>
- **Description:**

Use ED distance algorithm to enhance voice recognition and fetch out the geographic information.

Machine learning (OCR) (hack CAPTCHA)

2016

- **Technology skills:** Machine learning, Vision algorithm
- **Youtube:** <https://www.youtube.com/watch?v=9ovWzlu1zy8>
- **Description:**
Using RNN to hack CAPTCHA.

Make Desktop touchable with the cheap webcam

2013

- **Technology skills:** Vision algorithm, OpenCv, .NET framework
- **Youtube:** <https://www.youtube.com/watch?v=oRpueml3SzA>
- **Description:**
Gesture recognition by computer vision algorithm, user can control the computer with cheap webcam, no need expensive hardware.

Self-propelled Car

2014

- **Technology skills:** Vision algorithm, automation control theory, embedded platform
- **Youtube:** https://www.youtube.com/watch?v=WJ1_3XRyf2k
- **Description:**
Self-propelled car with automation control PID algorithm.

Award

Won "Qualcomm award" in 2012 Mobileheroes by "Book Finder" in 2012

Won "international ICT innovative services contest excellent work" by "Touch projector" in 2012