CHUNG YI KAO

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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

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

Mstar Semiconductor — Jan. 2016 - Sept. 2016
Senior Software Engineer — Hsinchu, Taiwan

- Developed Android system stack for smart TV (Binder, service)
- Implemented electronic program guide application.
- Implemented an automatic tool for multi-language translation
  (Improve developing efficiency: 5hs to 1s)
- Implemented logger.(Increase debugging efficiency from 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

- Implemented iOS monitor application, logging system, backend System for a cold-chain logistics system.
- Recognition algorithm for 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

- Implemented Book Finder Android App to search books
- Implemented assistant tools of library services
- Maintained 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

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

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
- Using Machine Learning to hack CAPTCHA
- Voice Recognition and Correction (ED algorithm)
- Touchable Desktop 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*:
  - Designed a lightweight algorithm of detection about status of container on RTOS embedded platforms.
  - Developed 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 for 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*:
  - Designed an AR feature, (without third party library)
  - UI and MVC implementation
- *Technology skills*: **Android, Java**
- *Youtube*: https://www.youtube.com/watch?v=BvLKtrgq_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 intuitive.

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

- *Technology skills*: **iOS, Objective-C**
- *Youtube*: https://www.youtube.com/watch?v=1UUcqf0pjM0
- *Pape*r: 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-bpWrYlk
- *Description*:

  Use edit 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 for automatic login.

Make Desktop touchable with the cheap webcam   2013

- *Technology skills*: Vision algorithm, OpenCv, .NET framework
- *Youtube*: https://www.youtube.com/watch?v=oRpuemI3SzA
- *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