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(oAuth2) 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.