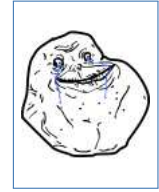


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## Curriculum Vitae

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✉ asd@alumni.nus.edu.sg



### Education

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#### Bachelor of Engineering (Electrical Engineering)

Aug 08 – May 12

NATIONAL UNIVERSITY OF SINGAPORE (NUS)

Specialization track: Embedded Systems

### Award

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#### NUS Faculty of Engineering Annual Book Prize

May 11

Best Student in EE3208 Embedded Computer Systems Design

### Experience

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#### Hardware Engineer (R&D)

Sep 12 – Aug 14

AGFDGFGSTECHNOLOGYPTE LTD

- Hardware Design: redesigned GPRS/3G modems and telemetry terminals to meet new requirements in functionality and cost.
  - Main components including 32-bit ARM microprocessor, Gemalto Cinterion M2M module, high-speed RS232 port and RS485 port with auto direction sensing.
  - Handled most of the product development phases including schematic capture, prototype, PCB design, and production transfer.
- Firmware Development: maintained and developed new features for the battery-powered GPRS/3G datalogger as well as other telemetry products.
  - Quickly took over and developed the required firmware features for the datalogger and successfully delivered the project within 3 months after joining.
  - Utilized the TCP/IP stack of Gemalto Cinterion module to establish GPRS/3G connection to back-end server for log data transfer and setting synchronization.
  - Maintained C code state-machine structure to meet low power consumption requirement ( $15\mu A$  in sleep mode,  $30mA$  during GPRS/3G data transfer).
- Mechanical Design: designed the plastic case for two products:
  - Modem terminal case: certified IP51 rating (dust proof and dripping water protection), with detachable mounting clip for wall or DIN rail mounting.
  - Battery-powered GPRS/3G datalogger case: designed for outdoor use with IP68 rating (dust tight and water submersion), with considerations for easy chemical flow during encapsulation process and hidden SIM card cover to avoid tampering.
- Technical Support: attended to booth visitors during IoT (Internet of Things) Asia 2014 exhibition; provided support (phone/email/on-site) to after-sale inquiries.

## **Firmware Test Engineer (Intern)**

*May 11 – Aug 11*

ATGTS DTS AER SINGAPORE PTE LTD

- Assisted the firmware development team to test new releases of `gasdgsdgdgsdgdgs`.

## **Other projects**

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### **Image processing for detection of product tampering using a camera**

*Aug 11 – May 12*  
NUS Final Year Project

- Proposed and implemented a new anti-tampering method (using OpenCV library) based on Scale Invariant Feature Transform (SIFT) image registration, Gaussian Mixture Model (GMM) background subtraction, and morphology operations.
- Successfully demonstrated the idea of using computer vision and image processing to detect several types of tampering such as removing of components or fixing small intrusion objects.

### **Hardware Accelerated PRESENT Cipher**

*Jan 12 – May 12*

- Implemented the hardware encryption/decryption engine of the 64-bit PRESENT ultra lightweight cipher on Xilinx Spartan 3E-1600 development board, including 3 variations: area-optimized, speed-optimized and 4-stage pipelined.
- Designed a Microblaze-core system with PRESENT cipher engine, VGA output and RS232 port to visualize result and compare the speed between hardware accelerated and traditional software implemented PRESENT cipher.

### **Talking Digital Multimeter**

*Jan 11 – May 11*

- Designed an auto-range digital multimeter (voltage/current/resistance measurement) based on an Intel i80188 embedded computer system platform, featuring 6-digit display and 8Ω speaker to read aloud measurement result.
- Implemented the whole firmware in assembly language, including the time-multiplexed 7-segment LED driver and speech synthesis.

### **8051 Microcontroller Sequencer Block**

*Aug 10 – Dec 10*

- Designed and implemented the sequencer block of the Intel i80C51 microcontroller on Xilinx Spartan 3A evaluation board, including the full instruction set and interrupt handling.

## **Computer skills**

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Programming: C/C+, Assembly (Intel x86), Matlab, VHDL, JAVA, PLC

Tools: Altium Designer, SolidWorks, Xilinx ISE

Others: MS Windows, MS Office, L<sup>A</sup>T<sub>E</sub>X, Linux

## **Interests**

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I like playing the guitar (fingerstyle, intermediate level), hiking with friends in nature reserves or historical sites.