

## Dinh Nguyen (Nguyễn Quốc Đình)

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### CONTACT INFORMATION

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### WORKING INTERESTS

M2M network, Internet of things, communication protocols, realtime systems, control system, Web service, distributed system.

### PROFESSIONAL EXPERIENCE

*Sr. Software Eng., [Zinno Inc](#) (formally [Veriksystems](#)), Jun 2016 - Now*

- Lead a backend group of three. Work with firmware and mobile teams. Architecture a smart home system that consists of Zwave/Zigbee hub and battery-powered camera. Language using: Nodejs, Golang. All the projects are built TDD, BDD mind, run with Gitlab CI pipeline.
- Implement API to manage user, home, hub, device, rule (if-this-then-that), and timeline.
- Implement voice skills that connect to [Alexa](#) and Google assistant.
- Implement FOTA service for devices to support firmware upgrading and text-to-speech converting with AWS Polly.
- Implement simple notification filtering for a camera that sends notification only when motion triggered by a human within 5 seconds. Utilizing AWS Rekognition.
- Used AWS IoT as MQTT broker at first. Later make a small clone of AWS IoT with better policy and shadow doc. Zinno IoT based on [aedes](#). Policy and shadow doc are stored in MongoDB. Events generated are sent to SQS.
- Implement a simple 1-N voice talkback relay service running with HTTP 1.1.
- Design payment service with Stripe.
- Design scaling strategy for video streaming service based on consistent hashing.

*Sr. Software Eng., [Hubble Connected](#), Sept 2015 - May 2016*

- Designed SDK for a Wifi bridge so that it can operate alone, can be controlled via mobile apps, and can be extended via external MCU.
- Designed non-Linux camera, run with RTOS and low power Wifi CC3100.

*CTO, co-founder, [Ubisen](#), 2013 - 2015*

- Led a group working in providing service for M2M/IoT networks.
- Designed many wireless sensor network motes, from Zigbee based SoC (ATmega128rfa1, CC2538) to Sub Ghz (ADuCRF101), to Wifi (ESP8266, CC3200).
- Designed cloud platform, powered by Nodejs, to connect to devices via REST API, websocket, and MQTT.
- Wrote COAP/HTTP proxy that runs on Linux box (e.g. Ras Pi, Beaglebone Black) to bridge sensor network to the Internet; contributed to [coap.js](#) library.
- Wrote opened OTA update for ESP8266 for both [firmware](#), and [server](#).

*Embedded software consultant, [SmartGrow](#), 2014*

- Wrote driver for CC2538 wireless network boards with Contiki OS for hydroponic and aquaponic monitoring system.
- Partly wrote gateway for the system.

*Lecturer, [Industrial University of Ho Chi Minh City](#), 2011 - 2015*

- Taught computer network, computer system classes.

*Researcher, Network System Lab., 2009 - 2011*

- Worked in the area of sensor network, industrial network.
- Project: Design wireless control network for public street lighting system (2011).
- Project: Implement monitoring software for Multifunction DAQ (MDAQ), Jan 2010 - Feb 2011.

**TECHNICAL SKILLS** Information Technology: Deep understanding in network protocols, such as TCP-IPv4/6, dynamic routing, SNMP, COAP, HTTP, MQTT, Pub-Sub, RPC.

Programming: C, Nodejs, Golang, Erlang (some), git, Makefile, MySQL, MongoDB, Redis, Kafka, Hyperledger, Docker, Gitlab CI, AWS. Coding with test driven development and behavior driven development.

Hardware design with many kinds of microcontroller: AVR, 8051, ARM, MSP430 from TI, DSP TMS320C2000 from TI, ESP8266.

Operating Systems: Linux, Contiki, FreeRTOS.

Mathematical background: probability, queueing theory, network calculus theory, linear control theory, control algorithm (PID, fuzzy).

## EDUCATION

**Kumoh National Institute of Technology**, Gumi, S. Korea

M.Eng., School of Electronic Engineering, Sept. 2009 - July 2011.

- Thesis Topic: *A gradient-based distributed traffic-aware routing for wireless networks.*
- Area of Study: Sensor Networks.

**Ho Chi Minh City University of Technology**, Ho Chi Minh City, Viet Nam

B.Eng., Electrical and Electronics Engineering, Sept. 2004 - June 2009.

- Bachelor of Engineering in Automatic Control, with Honors in Degree.
- Thesis Topic: Design a voice recognition system based on DSP TMS320C2000.

## REFEREED PUBLICATIONS

Tan, Do Duy; Quoc Dinh, Nguyen; Kim, Dong-Seong: "GRATA: gradient-based traffic-aware routing for wireless sensor networks", *IET Wireless Sensor Systems*, 2013.

Quoc Dinh, Nguyen; Dong-Sung, Kim: "Performance evaluation of priority CSMA-CA mechanism on ISA100.11a wireless network." *Computer Standards & Interfaces*, 2012.

N. Q. Dinh, T. D. Hoa, and D.-S Kim. Distributed Traffic Aware Routing with Multiple Sinks in Wireless Sensor Networks. *9th IEEE Int. Conf. on Industrial Informatics*, INDIN 2011, Lisbon, Portugal, 2003.

N. Q. Dinh, K.-S Song, P. T. A. Quang, and D.-S Kim. Periodic Data Transmission for Industrial Wireless Sensor Networks, *Int. Con. on Information and Computer Networks*, 2011, p186-190.

## LANGUAGE

Vietnamese: Mother tongue.

English: Quite good, got TOEIC 815 mark testing in April 2011.

CV updated April, 2019.