

# HOANG TRUONG

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## Education

- 5/2017 – Present: PhD Student, Computer Science, University of Colorado, Boulder.
  - 1/2017 – 5/2017: PhD Student. Computer Science, University of Colorado, Denver.
  - 2012 – 2014: Master degree, Computer Science, KAIST, Korea.
  - 2008 – 2012: Bachelor of Science, Cum Laude in Electrical Engineering, KAIST, Korea.
  - 9/2011 – 12/2011: Exchange program in Aalto University, Finland.
  - 2005 – 2008: Hanoi-Amsterdam High School for Gifted Students – Mathematical Major.
  - Fluent English – TOEFL iBT: 106. Intermediate Korean.
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## Research Experience

- 1/2017 – Present: **Assistant Researcher, MNS Lab** (<http://mnslab.org/>)  
Research on wireless communication, capacitive touch communication, mobile security and wearable devices.
  - *Capacitive touch communication*. Research on different methods of CTC for per-touch authentication application on commercial-of-the-shelf touch-enabled devices.
  - *Drone detection system*. Investigate the feasibility of a low-cost RF detection system that detects physical characteristics of the drone from wireless communication signal between drone and its controller.
  - *Capacitive sensing based gesture recognition system*. Research on low-power low-cost wearable platform that utilizes capacitive sensing for hand gesture recognition.
- 9/2012 – 11/2014: **Master degree, RESL lab, KAIST** (<http://resl.kaist.ac.kr>)
  - Implement Slow Hopping based Cooperative Sensing (SHCS) MAC protocol for cognitive radio networks, which improves aggregate throughput as well as achieves better coexistence with primary users and other secondary users in cognitive radio networks where each node has only one half-duplex radio. SHCS-MAC increases network capacity more efficiently, improves primary user detection probability, and achieves self-coexistence with minimal radio cost.
  - Research on Cooperative routing protocol for Cognitive Radio Adhoc Network that optimizes the communication channel end-to-end throughput.
- 2/2012 – 5/2012: **Graduation Research in Communication and Storage Laboratory (ComSto), KAIST** (<http://comsto.kaist.ac.kr>)  
Research on BCJR algorithm and its application. The use of BCJR algorithm in calculating the achievable information rate of the FSISI channel shows a clear improvement that surpasses the capacity of the binary-input AWGN channel at normalized SNRs less than -5dB.
- 7/2011 – 9/2011: **Internship in Smart Sensor Architecture Laboratory (SSAL), KAIST** (<http://vswww.kaist.ac.kr>)  
Research on background subtraction model of smart camera system using compressive sensing.

- 12/2010 – 5/2011: **KAIST Undergraduate Research Program** (<http://urp.kaist.ac.kr>)

Research on reducing error in retrieving information from captured images of Hologram ID Tags with random damaged. Result from using binary convolutional code in generation and reconstruction process dramatically reduces the error rate of reconstructed information (error rate after reconstruction is less than 0.95% with the original random error rate below 20%).

- 8/2010 – 5/2011: **Part-time researcher in CODE Lab, KAIST** (<http://code.kaist.ac.kr>)

Develop an algorithm for retrieving information from captured images of Hologram ID Tags, which are one of the most advanced anti-counterfeit ID solutions with large data storage capacity, high security, and strength against tag damages and have been applied in various areas of certificates, credit cards, currencies, and industrial products.

- 9/2010 – 12/2010: **DOSE (Distributed and Outsourced Software Engineering) course, ETH Zurich** ([http://se.inf.ethz.ch/courses/2010b\\_fall/dose/](http://se.inf.ethz.ch/courses/2010b_fall/dose/))

Cooperate with 2 teams from ETHZ (Switzerland) and UNRC (Argentina) in developing an English – Spanish learning tool using Eiffel language. Develop the connection between Eiffel simulator to MySQL database and gathered data for a small English – Spanish dictionary (including pictures and pronunciation audio).

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## Industry Experience

- 1/2015 – 1/2017: **Software Engineer, HUMAX Co., Ltd** (<http://www.humaxdigital.com>)

- Responsible for Android-based set-top box production (device drivers, Bluetooth stacks, hardware verification and factory application)
- Manage factory mass production process.
- Design and develop company own DVB engine for Android platform which was integrated into 2016 OTT set-top box productions.
- Train and manage Android platform junior team for R&D center.

- 5/2014 – 11/2014: **Startup Program, KAIST** (<http://startup.kaist.ac.kr>)

Develop an on-demand video platform for better users' experience and movie sharing purpose.

- 6/2012 – 8/2012: **Internship, Fsoft Lab, Vietnam** (<https://www.ftp-software.com>)

Implement a web service utilizing Hadoop Map-Reduce algorithm for face detection using very large database deployed in 5 servers, which significantly reduce the overall processing time.

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## Teaching Experience

### University of Colorado, Denver, USA

- Fall 2017: TA for Logic Design
- Fall 2017: TA for Embedded System Programming

### KAIST, Korea

- 2010 – 2014: Tutor for freshmen in KAIST Tutoring Program (Calculus I, Calculus II, Physics I, Chemistry I, and Introduction to Programming)

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## Selected Publications

- *Through-body Capacitive Touch Communication*  
Hoang Truong, P. Nguyen, V. Nguyen, M. Ibrahim, Richard Howard, Marco Gruteser and Tam Vu  
**ACM MobiCom – S3 Workshop**
- *Photometry based Blood Oxygen Estimation through Smartphone Cameras*  
Nam Bui, A. Nguyen, P. Nguyen, Hoang Truong, A. Ashok, T. Dinh, R. Deterding, and Tam Vu  
**ACM MobiCom – S3 Workshop – Best Paper Award**  
PulseOx app won **2<sup>nd</sup> place** in **App Contest**, MobiCom 2017
- *PhO<sub>2</sub>: Smartphone based Blood Oxygen Level Measurement Systems using Near-IR and RED Wave-guided Light*  
Nam Bui, A. Nguyen, P. Nguyen, Hoang Truong, A. Ashok, T. Dinh, R. Deterding, and Tam Vu  
**ACM SenSys 2017**
- *Matthan: Drone Presence Detection by Identifying Physical Signatures in the Drone's RF Communication*  
Phuc Nguyen, Hoang Truong, Mahesh Ravindranathan, Anh Nguyen, Richard Han, and Tam Vu  
**ACM MobiSys 2017** – Selected as **ACM SIGMOBILE Research Highlights 2017**
- *Capacitive sensing 3D-printed Wristband for Enriched Hand Gesture Recognition*  
Hoang Truong, Phuc Nguyen, Anh Nguyen, Nam Bui, and Tam Vu  
**ACM MobiSys 2017 - WearSys workshop**

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## Field Trip Experience

- 10/2016 – 11/2016: **NTT West** – Fukuoka, Japan  
Onsite support and integration for new product ([HB-2000](#))
- 5/2014: **Korea Defense Technology Exhibition** – KINTEX, Korea  
Demo: Software-Defined Radio (SDR) platform and Slow Hopping based Cooperative Sensing (SHCS) MAC protocol for cognitive radio networks performance.
- 11/2013: **19<sup>th</sup> CJK Workshop, Auto-ID Labs** – Seoul, Korea  
Presentation: Slow Hopping based Cooperative Sensing (SHCS) MAC protocol for cognitive radio networks implementation.
- 5/2013: **18<sup>th</sup> CJK Workshop, Auto-ID Labs** – Tokyo, Japan  
Presentation: Propose Software-Defined Radio (SDR) platform with ARM-based processor.

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## Skills

- Languages: C/C++, Java, Python, MATLAB
- Database: MySQL
- Image processing: OpenCV, MFC.
- Hardware Design: Altium Designer
- Platform: Android, MSP430, USRP

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## **Awards and Honors**

- 2017: ACM SIGMOBILE Research Highlights 2017 - Matthan: Drone Presence Detection
- 2017: MobiCom Travel Grant, Departmental Travel Grant, Dean's Travel Grant
- 2013: Best questioner award, 18<sup>th</sup> CJK Workshop.
- 2012 – 2014: KAIST Graduate Scholarship
- 2011: Certificate for completing Undergraduate Research Program (URP), KAIST.
- 2010: Certificate for completing THE SEVEN HABITS OF HIGHLY EFFECTIVE STUDENTS course.
- 2009: Outstanding Technical Poster for the Design of a Biosensor for Cancer Cell Detection.
- 2008 – 2012: KAIST Undergraduate Scholarship.