

# Kim, Minsung

Princeton, NJ, USA

[minsungk@cs.princeton.edu](mailto:minsungk@cs.princeton.edu)

---

## RESEARCH INTERESTS

Wireless Systems and Networks  
Quantum Computing (Quantum Annealing/Gate Model)  
Network Architecture/Protocols  
Distributed System and Machine Learning

## EDUCATION

### Princeton University, NJ

July. 2017 - Present

Ph.D. Student in the Department of Computer Science

Advisor: Prof. Kyle Jamieson ([kylej@cs.princeton.edu](mailto:kylej@cs.princeton.edu))

- **Selected Courses:** Advanced Computer Networks, Advanced Computer Systems, Wireless Networks

### Korea University, Seoul

Mar. 2010 - Aug. 2016

B.E. in Electrical Engineering, *Graduation with Great Honor (Summa Cum Laude)*

GPA : 3.97 / 4.0 (Original Scale 4.34 / 4.5 and 98.2 / 100)

Advisor: Prof. Sangheon Pack ([shpack@korea.ac.kr](mailto:shpack@korea.ac.kr))

- **Selected Courses:** Wireless Networks, Communications Network Design, Mobile Communication Engineering, Communication Theory, Data Communications, Digital Signal Processing, Digital Communications

### Stanford University, CA

Jun. 2016 - Aug. 2016

Visiting Student, Electrical Engineering

- **Selected Courses:** Convex Optimization, Statistical Signal Processing, Colloquium on Computer System

## WORK EXPERIENCES

### National Aeronautics and Space Administration (NASA) – Ames Research Center in Silicon Vally, CA

Advisor: Dr. Davide Venturelli ([davide.venturelli@nasa.gov](mailto:davide.venturelli@nasa.gov))

- Affiliated Researcher, *Quantum Artificial Intelligence Laboratory (QuAIL)* Apr. 2018 - Present
- Research Intern, *Quantum Artificial Intelligence Laboratory (QuAIL)* Jun. 2019 - Sep. 2019
- Visiting Scholar, *Universities Space Research Association (USRA)* July. 2018 - Aug. 2018

## RESEARCH EXPERIENCES

### Research on Optimizing Quantum Computation using Neural Network

July. 2019 - Present

*Quantum Artificial Intelligence Laboratory (QuAIL), NASA Ames Research Center*

- Optimizing Parameters of Quantum Annealing (D-Wave 2000Q) with a well-trained Neural Network.

### Research on Wireless Communication Systems leveraging Quantum Computing

July. 2017 - Present

*Princeton Advanced Wireless Systems (PAWS) Group, Princeton University – Joint Research with NASA*

- Transforming the Sphere Decoder for 5G Massive MIMO Communication with Quantum Computation.
- Led to NSF \$372,667 Award (1824357) and first paper on Quantum Computing in SIGCOMM.

### Performance Analysis on LTE Networks based on NS-3

Dec. 2014 - Jun. 2016

*Mobile Network & Communications (MNC) Lab, Korea University – Undergraduate Research Student*

- Analyzed performance of LTE X2 handover in small cell environment using NS-3 and Wireshark.

### Development on Cloud CDN system and Enterprise Storage using OpenStack

Apr. 2016 - Dec. 2016

*Hanium ICT Project, National IT Industry Promotion Agency – Joint Research with KT Cloud Team*

- Constructed global cloud CDN system and Zadara cloud enterprise storage using OpenStack Cinder.

**System Design Research and Development on Android App for Evaluation** Feb. 2016 - Oct. 2016

*Wireless & Wired Inter-Networking and Evaluation (WINE) Lab, Korea University*

- Designed GPS-based warning and detection system for preventing the spread of epidemic diseases.

**Independent Research Project ‘Smart Public Transportation’ using RFID** Jun. 2015 - Mar. 2016

*7<sup>th</sup> Creative Challenger Program, Korea University – KU Presidential Best Research Award*

- As a research team leader, led a study on service to provide comfort-level in vehicles for public transportation.

**Survey of Tactile Internet Application & Connected Car Auto-Driving System** Apr. 2015 - July. 2015

*Qualcomm IT Tour supported by Qualcomm in San Diego, CA*

- Presented Tactile Internet-based 3D hologram service and design of VANET-based highway infrastructure.
- Had a lively discussion with Paul Jacobs, Executive Chairman of Qualcomm, on future of wireless technology.

## **PUBLICATIONS**

**M. Kim**, D. Venturelli, and K. Jamieson, “Leveraging Quantum Annealing for Large MIMO Processing in Centralized Radio Access Networks,” In SIGCOMM 19`, Beijing, China August 19 - 23.

**M. Kim**, J. Y. Lee, and H. Kim, “Warning and Detection System for Epidemic Disease,” Proceedings of International Conference on ICT Convergence (ICTC) 2016, Jeju, Korea, October 19 - 21

## **ACADEMIC HONORS AND AWARDS**

**Great Honor, Korea University** August. 2016

Graduation with Great Honor at Korea University

**Korea University Presidential Best Research Award** March. 2016

Best Undergraduate Research at Creative Challenger Program

**Semester High Honors, Korea University** 8 Times

Exceptional Grades during All Semesters

**Qualcomm IT Tour supported by Qualcomm, CA** July. 2015

Selected Excellent Korean Engineering Student by Qualcomm

**Korea Telecom (KT) Excellence Award** February. 2016

Best Project & Outstanding Intern at KT

**Creative Challenger Scholarships, Korea University** Jun. 2015 - Mar. 2016

Research Funding for Creative Independent Research & Scholarships for Best Research

**National Science and Engineering Scholarship, Korea Student Aid Foundation** 5 Times

Full Scholarships for Academic Honors – Fall’10, Spring’14, Fall’14, Fall’15, Spring’16

**Best Honors Scholarship, LOTTE Foundation** 2 Times

Full Scholarships for Academic Honors – Spring’11, Fall’11

**Family Scholarships, Korea University** March. 2010

## **PREVIOUS WORK & OTHER EXPERIENCES**

**Teaching Assistant**, Department of Computer Science, Princeton University

- Wireless Networks (COS 463) Spring. 2019
- Mobile Computing Design for Assistive Technology (COS IW 07) Fall. 2018
- Network Measurement, Sensing, and Visualization Across the Princeton Campus (COS IW 08) Fall. 2018

<b>Internship</b> , Department of Wireless Engineering, Korea Telecom Optimized KT's communication systems using wireless network guard system (WING) & antenna tilting.	Dec. 2015 - Feb. 2016
<b>Intelligence Agent &amp; Translator (Eng)</b> , Foreign Affairs Division, National Police Covered special requirement intelligence (SRI) and foreign affairs in Korea.	Jun. 2012 - Mar. 2014 (Military Service in Korea)
<b>Experiment Assistant</b> , DSP Lab, Kyung Sung University Soldered AVR (ATMega128) test board and coded the microprocessor for experimental setup.	Feb. 2012 - Jun. 2012
<b>Presenter at K2 Global Leadership</b> , Keio University, Japan Discussed the role of Asian Engineering students in academia and industry.	August. 2015
<b>Tutor for Linear Algebra</b> , Korea University	Feb. 2016 - Jun. 2016
<b>Seminar Speaker on General Physics</b> , Korea University	Sep. 2011 - Dec. 2011

## ■ INVITED TALKS

<b>Wireless Systems and Quantum Computing</b> , Pusan National University	May. 2019
<i>End of CV</i> (latest update: 12/10/2019)	
<i>References, Prof. Jamieson, Kyle, Computer Science, Princeton University (kylej@cs.princeton.edu)</i>	
<i>References, Prof. Pack, Sangheon, Electrical Engineering, Korea University (shpack@korea.ac.kr)</i>	

## Links

### PAWS Research Group:

<https://paws.cs.princeton.edu/>

### LINKED IN:

[https://www.linkedin.com/in/minsung-kim-093407132?trk=nav\\_responsive\\_tab\\_profile\\_pic](https://www.linkedin.com/in/minsung-kim-093407132?trk=nav_responsive_tab_profile_pic)