

# Junghyun Kim

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*My Research Interest lies in theoretical computer science such as Algorithm, Optimization, Data Structure, Cryptography, Data science, High Performance Computing, and Machine Learning.*

## Education

- 2018–2019 **M.S in Computer Science.**  
Georgia Institute of Technology, Atlanta, GA
- 2015–2017 **B.S in Computer Science.**  
Georgia Institute of Technology, Atlanta, GA  
Threads (Concentration): Theory & Intelligence  
GPA: 3.75
- 2015–2018 **B.S in Mathematics.**  
Georgia Institute of Technology, Atlanta, GA

## Research Experience

- Aug 2017 - **Research Assistant, HPC Garage**, Georgia Institute of Technology.  
Present
  - Conducted a research on accelerating Tensor Factorization algorithm using CPU and GPU based parallelism.
  - Tuned parameter (block size) by finding the relationship between fill (the measure of how zero-elements are included using that block size) and operation time.
  - Advisor: Richard Vuduc
- Jun 2017 - **Research Intern, Security Lab**, Software R&D Center, Samsung Electronics.
- Aug 2017
  - Conducted a research on privacy preserving fingerprint authentication based on Minutiae points with Function-hiding Inner Product Encryption (IPE) so that no privacy is leaked even when either the server or device is hacked.
  - Surveyed previous (non-privacy preserving) biometric encryption schemes and fingerprint matching methods.
  - Devised a method to align the reference of fingerprint images consistently.
  - Implemented prototype of privacy preserving fingerprint authentication protocol and tested over a large dataset.
  - Advisor: Jinsu Kim and Junbum Shin
- Aug 2016 - **Research Assistant, Stadium - IoPT: Frequency Coordination**, Georgia Institute of Technology.  
Present
  - Worked on developing software that analyzes frequency sweep and helps assigning frequencies to agencies during the football game.
  - Worked on visualizing and analyzing data from sensors in the football stadium at Georgia Tech.
  - Advisor: Edward J Coyle and Randal T Abler

## Publication

*In preparation*

**Junghyun Kim**, Jinsu Kim, and Junbum Shin. Privacy Preserving Fingerprint Matching Protocols via Inner Product Encryption

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## Teaching Experience

Spring 2016, **Teaching Assistant.**

Fall 2017 ○ CS 4510: Automata and Complexity (Fall 2017)  
Instructor: Alexandra Boldyreva  
Class Size: 124 Students

○ CS 2051: Honors Discrete Math (Spring 2016)  
Instructor: Richard J. Lipton  
Class Size: 35 Students

Fall 2016- **Grader.**

Fall 2017 ○ MATH 3012: Applied Combinatorics (Fall 2017)  
Instructor: Fidel Barrera-Cruz  
Class Size: 52 Students

○ MATH 3012: Applied Combinatorics (Spring 2017)  
Instructor: Fidel Barrera-Cruz  
Class Size: 73 Students

○ MATH 3012: Applied Combinatorics (Spring 2017)  
Instructor: Ernie Croot  
Class Size: 84 Students

○ MATH 3012: Applied Combinatorics (Fall 2016)  
Instructor: Fidel Barrera-Cruz  
Class Size: 51 Students

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## Membership

May.2016- **Association for Computing Machinery (ACM).**  
Present

Jul.2017- **Institute of Electrical and Electronics Engineers (IEEE).**  
Present

Aug.2015- **Korean Computer Science (GT KCS).**  
Present President (May 2017 - Present), Member (Aug 2015 - Apr 2017)

Aug.2015- **Korean-American Scientists and Engineers Association (KSEA).**  
Present

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## Honors and Awards

### Grant

Jan 2018 **Travel Grant for Ygnite 2018**, \$100 in addition to lodging and meals.

### Honors

Spring 2017 **Dean's List**, *Georgia Institute of Technology*, Atlanta, GA.

Fall 2016 **Dean's List**, *Georgia Institute of Technology*, Atlanta, GA.

Spring 2016 **Faculty Honors**, *Georgia Institute of Technology*, Atlanta, GA.

Fall 2015 **Dean's List**, *Georgia Institute of Technology*, Atlanta, GA.

Jul. 2011 **Korea Olympiad in Informatics - National**, *Silver Award*, National Information Society Agency, South Korea.

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## Computer skills

Languages C/C++, CUDA, JAVA, PYTHON, PHP, HTML, CSS, JAVASCRIPT,  $\LaTeX$

Framework Node.js, Django  
Library OpenMP, JQuery  
Database MYSQL  
Operating Systems Microsoft Windows, Mac OS, Linux (Ubuntu)

## References

### **Richard J. Lipton**

College of Computing  
Georgia Institute of Technology  
Atlanta, GA 30332  
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### **Edward J Coyle**

School of Electrical and Computer Engineering  
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### **Ernie Croot**

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### **Junbum Shin**

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### **Alexandera Boldyreva**

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### **Fidel Barrera-Cruz**

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### **Randal T Abler**

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