Youngsuk Joseph Kim

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EDUCATION

MS/PhD in Computer Science @ **Georgia Tech** (GPA: 4.0/4.0) — Aug 2018 - now

BS in Computer Science @ **Korea University** (GPA: 4.09/4.5) — Mar 2014 - Feb 2018

EXPERIENCE

Graduate Research Assistant (advisor: Dr. Vivek Sarkar) — May 2019 – now
Habanero Extreme Scale Software Research Lab — Georgia Tech
- Implemented static analyzer to detect more than 55 security bugs in multi-threaded **Rust** crates
- Extend Rust type checker to perform inter-thread lifetime analysis

DARPA SDH Program Software Tester — July 2019
Parenthetic — Remote
- Implemented CNN & autoencoder models using new software tools
- Evaluated new software tools in terms of usability, correctness, relevance

Graduate Teaching Assistant — spring 2019 & spring 2021
CS 4240 (Compilers & Interpreters) — Georgia Tech
- Implemented compiler frontend for *Tiger* programming language
- Designed and graded course assignments and projects. Created review materials for class worksheets

Undergraduate Intern (advisor: Dr. SangKeun Lee) — Sep 2015 – Oct 2016
Data Intelligence Lab — Korea University
- Implemented news article recommendation engine in Java using TF-IDF vectors of documents

OPEN-SOURCE CONTRIBUTIONS

RustSec Advisory Database :
- Reported more than 43 security bugs from open-source Rust crates

MIRI (Rust MIR Interpreter) :
- Implemented features for Windows environment emulation

Tock OS (Rust embedded OS) :
- Patches for performance improvement / documentation fixes / assembly code patches

AWARDS & SCHOLARSHIPS

- **Georgia Tech Presidential Fellowship**, *Georgia Tech* — 2019 – now
- **National Science and Engineering Scholarship**, *Korea Student Aid Foundation* — 2016 – 2017

COURSE PROJECTS

Data Visualization & Analytics (fall 2020): Python(Flask & scikit-learn) + JavaScript(D3)
- Content-based analysis/visualization of music via mood classification & topic modeling

Program Analysis (fall 2019): Rust
- Local flow-sensitive points-to analysis for detecting use-after-free bugs in Rust programs

Artificial Intelligence (fall 2018): Python
- Game AI using alpha-beta pruning , A* Search for path finding, etc

Deep Learning (fall 2017): Python(PyTorch)
- Cdiscount's Image Classification Challenge (Global Kaggle competition) (Ranked 148 th / 626)

Compilers (spring 2017): OCaml
- Compiler frontend (lexer, parser, IR generator, interpreter, optimizer) for a subset language of C

System Programming (fall 2016): C
- File system profiler to compare disk I/O of *ext4* vs *NILFS2*
- Packet-filtering kernel module using Netfilter & Proc file system

Information Retrieval (fall 2016): C++
- Pre-process news text data, and implement inverted index backend for news document search engine

COURSES

- **Graduate**
  - Program Analysis, Systems & Networks, Intro to Info Security, Data Visualization & Analytics
  - Parallelizing Compilers, Machine Learning for Trading, A.I., Algorithms, Intro to Health Informatics
- **Undergraduate**

- Compilers, Programming Languages, Formal Logic, Computer Architecture, Computer System Design, Operating Systems, Databases, System Programming, Information Security, Computer Network, Distributed Processing, Machine Learning, Data Science, A.I., Information Retrieval, Linear Algebra, Special lecture on Deep Learning, Theory of Computation

- **Coursera**
  - Parallel, Concurrent, and Distributed Programming in Java (3-course specialization) by Rice University
  - Build a Modern Computer from First Principles: From Nand to Tetris (project-centered Course) by Hebrew University of Jerusalem
  - Machine Learning by Stanford University