Byeongjee Kang

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EDUCATION

Carnegie Mellon University Pittsburgh, USA

Ph.D. in Software Engineering (Advisor: Prof. Umut Acar) *Aug 2023 – Present*

Pohang University of Science and Technology (POSTECH) Pohang, Korea

Bachelor of Computer Science and Engineering/Mathematics (double major) *Feb 2018 – Feb 2023*

- GPA : 4.26/4.3 (ranked 1st in class)
- Entered with *Program for highly Dedicated Students (PHDs)*, presidential scholarship and supporting program offered to one outstanding high school student in the year
- Graduated within 6 semesters (leave of absence for military duty during Jan 2020 – Dec 2021)

Korea Science Academy of KAIST *(High School for Science-Gifted Students)* Busan, Korea

Graduated *Feb 2015 – Feb 2018*

- GPA : 4.23/4.3 (ranked 1st in class)
- Funded by Korea Science Academy Fund Scholarship

PUBLICATION

Narrowing and Heuristic Search for Symbolic Reachability Analysis of Concurrent Object-Oriented Systems, Byeongjee Kang and Kyungmin Bae, Science of Computer Programming 2024 (doi.org/10.1016/j.scico.2024.103097)

Symbolic Reachability Analysis of Distributed Systems using Narrowing and Heuristic Search, Byeongjee Kang and Kyungmin Bae, International Workshop on Formal Techniques for Safety-Critical Systems (FTSCS) 2022 (doi.acm.org?doi=3563822.3568017)

PUBLICATION (UNDER REVIEW)

Mr3: An Execution Framework for Hive and Spark Sungwoo Park, Seunggon Namgung, Byeongjee Kang, Journal of Distributed and Parallel Computing (dx.doi.org/10.2139/ssrn.4587845)

HONORS AND SCHOLARSHIPS

ILJU Fellowship (ILJU Academy and Culture Foundation) *Aug 2023 – July 2028*
- Received total of USD 12,000 over eight semesters during graduate studies

Program for Highly Dedicated Students (POSTECH) *Feb 2018 – Feb 2023*
- Presidential scholarship and supporting program in POSTECH offered to **one outstanding freshman** each year

Presidential Science Scholarship (Ministry of Education of Korea) *Feb 2018 – Feb 2023*
- National science scholarship offered to top freshmen students in the field of science and technology

Global Leadership Program (CSE Department, POSTECH) *Sep 2019 – Present*
- Scholarship and research support program for selected students in computer science department

Domun Scholarship (POSTECH) *Feb 2019*
- Scholarship for freshmen with highest GPA

Research Experiences

POSTECH Software Verification Laboratory Pohang, Korea

Research Intern - Advised by Prof. Kyungmin Bae *Feb 2022 – May 2023*

- **Symbolic Reachability Analysis of Distributed Systems using Narrowing and Heuristic Search**
    - Designed and implemented search heuristic for narrowing-based symbolic reachability analysis of distributed systems
    - Paper accepted to *International Workshop on Formal Techniques for Safety-Critical Systems 2022*

POSTECH Programming Languages Laboratory Pohang, Korea

Research Intern - Advised by Prof. Sungwoo Park *June 2018 – June 2019*

- **MR3**: General purpose distributed execution framework written in Scala
    - Designed and implemented locality-aware task scheduler achieving higher throughput

Work Experiences

Kodebox Seoul, Korea

Software engineer as military service alternative *Jan 2020 – Dec 2021*

- **CodeChain Foundry**: Open-source blockchain engine based on composable module system
    - Worked as software engineer
    - Implemented BLS signature aggregation scheme to optimize block seal size
    - Designed interface for modules to communicate with consensus engine
    - CodeChain Foundry is written in Rust
- **Zuzu**: Web-based captable management software
    - Worked as full-stack software engineer
    - Main features implemented include regression testing framework for document generation service, payment, and more
    - Tech Stacks: Django (Python), React (TypeScript), GraphQL, Kubernetes, Google Cloud Platform

Teaching Experiences

Student Mentoring Program (CSE Department, POSTECH) *Feb 2022 – June 2022*

- Served as tutor to teach Algorithm course

Intensive Research Program (POSTECH) *Jan 2019*

- Served as mentor in research experience program for science high school students

Voluntary Teaching (POSTECH Volunteering Club) *Jan 2019 – Dec 2019, Sep 2022 – Dec 2022*

- Served as voluntary teacher of math for unprivileged middle school students

Exchange Student & Language Program

Summer Session Program TU Berlin

Data science course *Aug 2019 — Sep 2019*

English Program University of New South Wales

English course *Dec 2017 — Jan 2018*

AwesomeMath Summer Program Cornell University

Mathematics problem solving program for gifted middle and high school students *June 2016 — July 2016*

Extracurricular Activities & Miscellaneous

POSTECH Decentralized Autonomous Organization (PDAO)   POSTECH

Student association for blockchain development and research   *Feb 2022 – Present*
- Served as mentor in blockchain core development team

- Designed consensus algorithm to be used in PDAO

Intensive Research Program   POSTECH

Research experience program for science high school students - advised by Prof. Jae-Joon Kim   *July 2017*
- Learned basic deep learning concepts and researched on techniques to reduce size of DNN

Research and Education (R&E) Program   Korea Science Academy of KAIST

Group research program for juniors - Advised by Dr. Youngchul Jeon   *Mar 2016 – Dec 2016*
- Researched properties of *Abelian Ring*, a field of noncommutative ring theory

- Presented result as school representative in Japan Super Science Fair (JSSF) 2016, at Ritsumeikan High School

Korea Young Physicists' Tournament (KYPT)   The Korean Physical Society

Team-based scientific competition for high school students   *June 2017 – Jan 2018*
- Designed and performed experiments, and debated with other teams on the outcome

- Won gold medal

POSCAT   POSTECH

Students club for algorithm study and competitive programming   *Feb 2018 – Dec 2019*
- Committee member of Postech Programming Contest 2019

POSTECH Student Ambassador   International Relations, POSTECH

Student-run POSTECH International PR group   *Feb 2018 – Dec 2018*
- Voluntary service to support exchange students visiting POSTECH

POBBA   POSTECH

Basketball club   *Feb 2018 – Present*
- Served as club secretary during the year 2019

Languages

Korean (native), English (fluent)