Jaemin Hong, PhD

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Employment

2025 – **Research Associate**, School of Computing, KAIST.

Education

2020 – 2025 **PhD in Computer Science**, KAIST.
Thesis title: *Improving C-to-Rust translation with static analysis*
Advisor: Sukyoung Ryu

2016 – 2020 **BS in Computer Science**, KAIST.
Double Major in Mathematics
Cumulative GPA: 4.17/4.3

Publications

Research Publications

1. **J. Hong** and S. Ryu, "Automatically translating C to Rust," *Commun. ACM*, 2025, To appear.
2. **J. Hong** and S. Ryu, "Forcrat: Automatic I/O API translation from C to Rust via origin and capability analysis," 2025. arXiv: 2506.01427 [cs.SE]. URL: https://arxiv.org/abs/2506.01427.
3. **J. Hong** and S. Ryu, "Don't write, but return: Replacing output parameters with algebraic data types in C-to-Rust translation," *Proc. ACM Program. Lang.*, vol. 8, no. PLDI, Jun. 2024. DOI: 10.1145/3656406.
4. **J. Hong** and S. Ryu, "To tag, or not to tag: Translating C's unions to Rust's tagged unions," in *Proceedings of the 39th IEEE/ACM International Conference on Automated Software Engineering*, ser. ASE '24, Sacramento, CA, USA: Association for Computing Machinery, 2024, pp. 40–52. DOI: 10.1145/3691620.3694985.
5. **J. Hong** and S. Ryu, "Type-migrating C-to-Rust translation using a large language model," *Empirical Software Engineering*, vol. 30, no. 1, Oct. 2024. DOI: 10.1007/s10664-024-10573-2.
6. **J. Hong**, S. Shim, S. Park, T. W. Kim, J. Kim, J. Lee, S. Ryu, and J. Kang, "Taming shared mutable states of operating systems in Rust," *Science of Computer Programming*, vol. 238, p. 103 152, 2024. DOI: 10.1016/j.scico.2024.103152.
7. **J. Hong**, "Improving automatic C-to-Rust translation with static analysis," in *2023 IEEE/ACM 45th International Conference on Software Engineering: Companion Proceedings (ICSE-Companion)*, 2023, pp. 273–277. DOI: 10.1109/ICSE-Companion58688.2023.00074.
8. **J. Hong** and S. Ryu, "Concrat: An automatic C-to-Rust lock API translator for concurrent programs," in *Proceedings of the 45th International Conference on Software Engineering*, ser. ICSE '23, Melbourne, Victoria, Australia: IEEE Press, 2023, pp. 716–728. DOI: 10.1109/ICSE48619.2023.00069.
9. J. Park, **J. Hong**, and S. Ryu, "Semantic transformation framework for rewriting rules," in *Proceedings of the 2023 ACM SIGPLAN International Workshop on Partial Evaluation and Program Manipulation*, ser. PEPM 2023, Boston, MA, USA: Association for Computing Machinery, 2023, pp. 1–13. DOI: 10.1145/3571786.3573016.
10. J. Park, S. Lee, **J. Hong**, and S. Ryu, "Static analysis of JNI programs via binary decompilation," *IEEE Transactions on Software Engineering*, vol. 49, no. 5, pp. 3089–3105, May 2023. DOI: 10.1109/tse.2023.3241639.

11 G. Park, **J. Hong**, G. L. Steele Jr., and S. Ryu, "Polymorphic symmetric multiple dispatch with variance," *Proc. ACM Program. Lang.*, vol. 3, no. POPL, Jan. 2019. DOI: 10.1145/3290324.

12 **J. Hong**, J. Park, and S. Ryu, "Path dependent types with path-equality," in *Proceedings of the 9th ACM SIGPLAN International Symposium on Scala*, ser. Scala 2018, New York, NY, USA: Association for Computing Machinery, 2018, pp. 35–39. DOI: 10.1145/3241653.3241657.

Books

1 **J. Hong**, 타입으로 견고하게 다형성으로 유연하게: 탄탄한 개발을 위한 씨줄과 날줄. 도서출판인사이트, Oct. 2023, p. 378, ISBN: 978-89-6626-417-9.

2 **J. Hong** and S. Ryu, *Introduction to Programming Languages*. Aug. 2023, p. 306, Used as a textbook at KAIST, UNIST, and Chungbuk National University, and as a reference at Korea University. URL: https://hjaem.info/pdfs/itpl-2023-08-10.pdf.

Experience

Honors and Awards

2025 **Jang Young Sil Fellow Program (Excellence Track)**, KAIST.
Best PhD Dissertation Award, College of Engineering, KAIST.
Outstanding PhD Thesis Award, School of Computing, KAIST.
2023 **Outstanding Teaching Assistant Award**, School of Computing, KAIST.
2022 **Outstanding Teaching Assistant Award**, School of Computing, KAIST.
2021 **Outstanding Teaching Assistant Award**, School of Computing, KAIST.
2020 **Outstanding Teaching Assistant Award**, School of Computing, KAIST.
President's Award for Academic Excellence, KAIST.
Kwanjeong Domestic Graduate School Scholarship, Kwanjeong Educational Foundation.
Summa Cum Laude, KAIST.
2018 **Second Prize for Student Research Competition**, "Path dependent types with path-equality," *The 16th Asian Symposium on Programming Languages and Systems (APLAS)*.
Dean's List, College of Engineering, KAIST.
2017 **Dean's List**, College of Engineering, KAIST.
POSA IT Scholarship, Korea Postal Service Agency.
2016 **Dean's List**, School of the Freshman, KAIST.
KAIST Presidential Fellowship (KPF), KAIST.

Activities

2025 **Program Committee Member**, ASE 2025 (The 40th IEEE/ACM International Conference on Automated Software Engineering).
Program Committee Member, SCAM 2025 (The 25th IEEE International Conference on Source Code Analysis and Manipulation).
Journal Reviewer, TOPLAS (ACM Transactions on Programming Languages and Systems).
Journal Reviewer, TSE (IEEE Transactions on Software Engineering).
Journal Reviewer, TOSEM (ACM Transactions on Software Engineering and Methodology).
Journal Reviewer, EMSE (Empirical Software Engineering).
Journal Reviewer, ASE (Automated Software Engineering).
2023 **Teaching Assistant**, CS320 Programming Languages, KAIST.

2022 **Book Reviewer**, *I Guess We're Doing Functional Programming Now*, CRC Press.

Teaching Assistant, CS320 Programming Languages, KAIST.

2021 **Student Volunteer (Co-Chair)**, ICFP 2021 (The 26th ACM SIGPLAN International Conference on Functional Programming).

Student Volunteer, POPL 2021 (The 48th ACM SIGPLAN Symposium on Principles of Programming Languages).

Teaching Assistant, CS320 Programming Languages, KAIST.

2020 **Student Volunteer**, SPLASH 2020 (The ACM SIGPLAN Conference on Systems, Programming, Languages, and Applications: Software for Humanity).

Student Volunteer (Co-Chair), ICFP 2020 (The 25th ACM SIGPLAN International Conference on Functional Programming).

Teaching Assistant, CS320 Programming Languages, KAIST.

2019 **Student Volunteer**, ECOOP 2019 (The 33rd European Conference on Object-Oriented Programming).

Teaching Assistant, CS496 Immersion Camp: Intensive Programming and Startup, KAIST.

2018 **Teaching Assistant**, CS496 Immersion Camp: Intensive Programming and Startup, KAIST.

2017 **Teaching Assistant**, CS496 Immersion Camp: Intensive Programming and Startup, KAIST.