

Dongjae Lee

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Research Interests

My research focus is on developing reliable programming systems by combining programming language theory and agentic AI. Specifically, I am interested in the following research topics:

- **Verified AI Programming:** Research on developing reliable AI programming systems by combining AI programming with formal verification techniques to ensure correctness, enabling AI agents to generate not only implementations but also proofs of their correctness.
- **Specification Language for Verified AI Programming:** In verified AI programming, writing specifications is a key bottleneck to ensuring correctness. This research focuses on developing specification languages that are both precise and easy to understand.
- **Neuro-Symbolic Agent Safeguards:** Research on verifying the safety of AI agents' actions using formal verification techniques and building guardrails for AI agents based on these verifications.

Education

Ph.D. in School of Computing <i>KAIST</i> Advisor: Prof. Kihong Heo	2026 – Present <i>Daejeon, South Korea</i>
M.S. in School of Computing (Master's Thesis Excellence Award) <i>KAIST</i> Advisor: Prof. Kihong Heo	2024 – 2026 <i>Daejeon, South Korea</i>
B.S. in School of Computing (Summa Cum Laude) <i>KAIST, GPA: 4.03/4.3</i>	2020 – 2024 <i>Daejeon, South Korea</i>

Publications

1. **Expecto: Extracting Formal Specifications from Natural Language Description for Trustworthy Oracles** **2026**
 - Dongjae Lee and Kihong Heo.
 - ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI), 2026
2. **VeriSafe Agent: Safeguarding Mobile GUI Agent via Logic-based Action Verification** **2025**
 - Jungjae Lee*, Dongjae Lee*, Chihun Choi, Youngmin Im, Jaeyoung Wi, Kihong Heo, Sangeun Oh, Sunjae Lee, and Insik Shin (*: equal contribution).
 - ACM International Conference on Mobile Computing and Networking (MobiCom), 2025
3. **BugSynth: Automatic Synthesis of Realistic and Reliable Bug Benchmark** **2024**
 - Minsol Park, Dongjae Lee, and Kihong Heo.
 - Korea Software Congress (KSC), 2024

Honors & Awards

- **Grand Prize, AI Champion Competition** **2025**
Minister of Science and ICT Award, Team autophone
- **Outstanding Teaching Assistant** **2025**
CS424 Program Reasoning, Fall Semester
- **Outstanding Presentation Paper Award** **2024**
Korea Software Congress (KSC), BugSynth
- **Finalist, Global AI Idea Lab Contest** **2024**
CODEGATE 2024
- **National Excellence Scholarship** **2023**
KAIST

- **National Excellence Scholarship** **2022**
KAIST
- **Dean's List** **2021**
College of Engineering, Fall Semester
- **Dean's List** **2020**
School of Freshmen, Spring Semester