

Daye Nam

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Research Interests

Software Engineering, Human-Computer Interaction, Artificial Intelligence
Machine Learning for SE, Developer Experience, Mining Software Repository

Education

- 2018–Present **Carnegie Mellon University, Pittsburgh, USA.**
Ph.D. in Software Engineering
Advisor: Brad A. Myers, Bogdan Vasilescu, Vincent Hellendoorn
- 2016–2018 **University of Southern California, Los Angeles, USA.**
M.S. in Computer Science
Advisor: Nenad Medvidovic
- 2012–2016 **Yonsei University, Seoul, Korea.**
B.S. in Computer Science
- 2014–2015 **University of California Irvine, Irvine, USA.**
International Exchange Program, Major: Computer Science

Awards & Honors

- 2019 Finalist for the Microsoft Research Ada Lovelace Fellowship
- 2019 2nd Place in ASE Student Research Competition, ACM
- 2019 ACM Student Research Competition Travel Award for ASE 2019, ACM
- 2018 SIGSOFT CAPS Student Travel Award for ICSE 2018, ACM SIGSOFT
- 2018 Best Research Award, University of Southern California (2 recipients in CS Department)
- 2017 Academic Excellence Scholarship, Yonsei Alumni Association of Southern California
- 2017 Best Tool Paper Award, ASE 2017
- 2014 – 2015 Academic Excellence Scholarship, Korea Student Aid Foundation
- 2015 Grand Prize, Graduation Exhibition, Computer Science, Yonsei University
- 2013 Outstanding Paper Award, WISET
- 2013 Academic Excellence Scholarship, Yonsei University

Publications

- [10] **Daye Nam**, Brad Myers, Bogdan Vasilescu, and Vincent Hellendoorn. (2023) Improving API Knowledge Discovery with ML: A Case Study of Comparable API Methods *The 45th International Conference on Software Engineering (ICSE)*, acceptance rate: 26% = 208/796.
- [9] **Daye Nam***, Baishakhi Ray*, Seohyun Kim, Xianshan Qu, Satish Chandra (2022) Predictive Synthesis of API-Centric Code. *The 6th ACM SIGPLAN International Symposium on Machine Programming (MAPS@PLDI)*.
- [8] **Daye Nam**, Amber Horvath, Andrew Macvean, Brad Myers, and Bogdan Vasilescu. (2019) MARBLE: Mining for Boilerplate Code to Identify API Usability Problems. *The 34th International Conference on Automated Software Engineering (ASE)*, acceptance rate: 21% = 93 / 445.
- [7] **Daye Nam**. (2019) API Design Implications of Boilerplate Client Code. *The 34th International Conference on Automated Software Engineering, Student Research Competition (ASE SRC)*.

- [6] Amber Horvath, Sachin Grover, Sihan Dong, Emily Zhou, Finn Voichick, Mary Beth Kery, Shwetha Shinju, **Daye Nam**, Mariann Nagy, and Brad Myers. (2019) The Long Tail: Understanding the Discoverability of API Functionality. *2019 Symposium on Visual Languages and Human-Centric Computing (VL/HCC)*.
- [5] **Daye Nam** and Mayank Kejriwal. (2018) How Do Organizations Publish Semantic Markup? Three Case Studies using Public Schema.org Crawls. *IEEE Computer*, vol. 51, no. 6, pp. 42-51.
- [4] Arman Shahbazian, **Daye Nam**, and Nenad Medvidovic. (2018) Toward Predicting Architectural Significance of Implementation Issues. *The 15th International Conference on Mining Software Repositories (MSR)*.
- [3] **Daye Nam**, Youn Kyu Lee, and Nenad Medvidovic. (2018) EVA: A Tool for Visualizing Software Architectural Evolution. *The 40th International Conference on Software Engineering: Companion Proceedings (ICSE Demo)*.
- [2] Youn Kyu Lee, **Daye Nam**, and Nenad Medvidovic. (2017) Identifying Inter-Component Communication Vulnerabilities in Event-based Systems. *Technical Report*.
- [1] Youn Kyu Lee, Peera Yoodee, Arman Shahbazian, **Daye Nam**, and Nenad Medvidovic. (2017) SEALANT: A Detection and Visualization Tool for Inter-App Security Vulnerabilities in Android. *The 32nd International Conference on Automated Software Engineering (ASE Demo)*. *Best Tool Paper Award*.

Research Experience

- 09/2018 – **Graduate Research Assistant, Advisors: Brad Myers, Bogdan Vasilescu, Vincent Hellendoorn.**
Present Carnegie Mellon University, Pittsburgh, USA
 - Designing automatic techniques to extract API-related information from multiple sources (e.g., Stack Overflow), and devising approaches to filter and summarize it.
 - Investigated characteristics of boilerplate code, and studied the impact of API design on the need for boilerplate in client code.
 - Built MARBLE, a novel approach to automatically mine boilerplate code from a large set of client code.
 - Conducted a user study to test the usefulness of providing comparable API methods and confirmed that it helps developers understand the design space of APIs.
 - Created SOREL, a machine-learning-based knowledge extraction tool that can automatically identify pairs of comparable API methods and the sentences describing the comparison from Stack Overflow answers.
- 05/2021 – **Software Engineer Intern, Host: Satish Chandra, Collaborator: Baishakhi Ray.**
09/2021 Probability Team, Facebook, Menlo Park, USA
 - Designed compositional neural models to predict a sequence of API functions that would be needed for a task, given an input-output pair.
 - Incorporated the compositional models into existing enumerative search-based program synthesizer.
- 06/2020 – **Research Scientist Intern, Host: Andrew Macvean, Co-host: Harini Sampath.**
08/2020 Cloud DevEx Team, Google, Seattle, USA
 - Analyzed documentation pageview logs to understand how different users forage for information in documentation.
 - Designed a survey to study developers' documentation preferences and their backgrounds.
- 05/2017 – **Research Assistant, Advisor: Nenad Medvidovic.**
07/2018 Software Architecture Research Group, University of Southern California, Los Angeles, USA
 - Designed and built a tool for visualizing software architecture evolution with contextual information.
 - Investigated architectural design decisions in the issue and code repositories, and built a predictive model which identifies the architectural significance.
 - Built a benchmark for event-based systems' security vulnerability and evaluated existing vulnerability detection tools.
- 05/2017 – **Research Assistant, Advisor: Mayank Kejriwal.**
04/2018 Information Sciences Institute, University of Southern California, Los Angeles, USA
 - Conducted an empirical study on organizations that expose semantically linked Schema.org annotations.
 - Embedded natural language documents as a rich network to improve performance on the multi-class document classification problem.
- 01/2017 – **Directed Research, Advisor: Joseph Lim.**
03/2017 University of Southern California, Los Angeles, USA
 - Designed and implemented the experimental tools for crowdsourcing, and collected video-image-annotation data using Amazon Mechanical Turk.

- 12/2015 – **Research Assistant**, *Advisor: SeonJoo Kim.*
- 07/2016 Computational Intelligence & Photography Lab, Yonsei University, Seoul, Korea
- Conducted research to improve the image digital processing pipeline for smart-phone cameras.
 - Performed experiments on deep learning based image filtering with different deep learning models.
- 01/2013 – **Research Assistant**, *Advisor: InKwon Lee.*
- 03/2014 Computer Graphics & Applications Lab, Yonsei University, Seoul, Korea
- Designed and performed experiments on Just-Noticeable Difference (JND) between sound and vision in a 3D environment based on a Head-Related Transfer Function (HTRF) data.

Teaching

- Fall 2022 **Co-Instructor**, *17-313 Foundations of Software Engineering by Michael Hilton, Rohan Padhye, Chris Timperley, and Daye Nam.*
- Fall 2021 **Head TA**, *17-313 Foundations of Software Engineering by Michael Hilton and Rohan Padhye.*
- Assisted instructors in designing mid-term, assignments, and recitation contents.
 - Gave a guest lecture on automated tools for software engineers.
 - Created rubrics for assignment gradings and
 - Delivered 1 lecture on automated developer tools.

Service

Web Chair, *FSE 2023.*

Reviewer, *Semantic Web Journal 2018, FSE 2021 Artifacts, UIST 2022 (external).*

Committee Member, *CMU ISR-SE Ph.D. Admission, CMU ISR Teaching-Track Faculty Hiring.*

Shadow/Junior PC Member, *MSR 2021, MSR 2023.*

Student Volunteer, *ICSE 2018, ICSE 2020, ICSE 2022.*

CMU Graduate Applicant Support Program at SCS, *Department Lead (2020), Mentor (2020, 2021), SCS Organizer (2022) .*

Miscellaneous

- 06/2014 – **Likelion**, *Organizer & Teacher*, Seoul, Korea.
- 11/2014
- Taught and mentored 20 non-CS major students to improve programming skills and knowledge to make their own applications. Students made 6 web services and 2 teams started their own start-up.
 - Acceptance rate: 11.3% (Teacher), 6.7% (Student)
 - Supported by Google.
- 11/2013 – **U.Genie.us.**, *Junior Developer*, Seoul, Korea.
- 04/2014
- Implemented a management page for a mobile application.
 - Implemented a web application to manage electronic records for Ewha Hospital. Took charge of 3 main pages and core functions: accounts management, reservation management, mother notes, etc.
- 01/2014 – **Microsoft Imagine Cup**, Seoul, Korea.
- 03/2014
- Designed and prototyped an open lecture platform, which utilized Open Course Ware (OCW) and let the prosumers take or organize courses for students.
 - Advanced to the Korean Final.