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Daye Nam

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

Research Experience

09/2018 – Present **Graduate Research Assistant**, *Advisors: Brad Myers, Bogdan Vasilescu, Vincent Hellendoorn*.
Carnegie Mellon University, Pittsburgh, USA
- Designing automatic techniques to extract API-related information from multiple sources (e.g., Stack Overflow), and presenting such information to developers considering their context.
- 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.
- Conducted a user study to test the usefulness of generating information using pre-trained large language model in assisting developers understand code.

05/2021 – 09/2021 **Software Engineer Intern**, *Host: Satish Chandra, Collaborator: Baishakhi Ray*.
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 – 08/2020 **Research Scientist Intern**, *Host: Andrew Macvean, Co-host: Harini Sampath*.
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 – 07/2018 **Research Assistant**, *Advisor: Nenad Medvidovic*.
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 – 04/2018 **Research Assistant**, *Advisor: Mayank Kejriwal*.
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.

Awards & Honors

2023 NSF Travel Award for ICSE 2023, NSF
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

[12] **Daye Nam**, Andrew Macvean, Vincent Hellendoorn, Bogdan Vasilescu, and Brad Myers. (2023) In-IDE Generation-based Information Support with a Large Language Model *Arxiv*

[11] Matin Amoozadeh, David Daniels, Stella Chen, **Daye Nam**, Aayush Kumar, Michael Hilton, Mohammad Amin Alipour, and Sruti Srinivasa Ragavan. (2023) Characterizing Students Trust in Generative Artificial Intelligence. ACM Conference on International Computing Education Research (ICER LT&P Track).

[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 Proceeedings (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.*

Patent

[1] Youn Kyu Lee, Nenad Medvidovic, Peera Yoodee, Gholamreza Safi, Arman Shahbazian, Yixue Zhao, Jae Bang, and **Daye Nam**. (2020) SEALAnT: Security for End-Users of Android via Light-Weight Analysis Techniques. *U.S. Patent*, No. 10,827,349

Teaching

Fall 2022 **Co-Instructor**, *17-313 Foundations of Software Engineering*.

Michael Hilton, Rohan Padhye, Chris Timperley, and Daye Nam

- Collaborated with course instructors to enhance course structure, project requirements, and assignments to accommodate a larger class size.
- Delivered 4 lectures on team communication, documentation, ML explainability, and user studies.
- $\approx$ 150 students, 2 sections.

Fall 2021 **Head Teaching Assistant**, *17-313 Foundations of Software Engineering*.

Michael Hilton and Rohan Padhye

- Assisted course instructors in developing midterm and assignment content and delivered a lecture on automated developer tools.
- Created grading rubrics for assignments and exams and supervised a team of 3 undergraduate TAs.
- $\approx$ 70 students.

Service

Web Chair, *FSE 2023*.

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, ICSE 2023*.

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

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