Aashish Yadavally

Ph.D. Candidate
Department of Computer Science
The University of Texas at Dallas

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Research Summary

Broadly, I am interested in applying AI techniques to eliminate challenges in Software Engineering (AI4SE), specifically to *enable partial program analysis* and *improve security in software systems*. The following sub-domains are central to my research: software engineering, static and dynamic analysis, software security, machine learning, large language models, and automated reasoning.

Education

2020 – 2024 **Ph.D. in Computer Science**, *The University of Texas at Dallas*

Research Areas: Software Engineering, Program Analysis, Artificial Intelligence
Advisor: Dr. Tien N. Nguyen

2018 – 2020 **M.S. in Artificial Intelligence**, *The University of Georgia*

Thesis: An Exploration of Machine Learning Based Day-Ahead Solar Irradiance Forecasting Methodologies.
Advisor: Dr. Frederick Maier

2014 – 2018 **B.Tech in Computer Science**, *Indian Institute of Information Technology Vadodara*

Capstone Project: Automatic Speech Recognition using Deep Learning.
Advisor: Dr. Anil Kumar Vuppula

Honors and Awards

2024 **Distinguished Junior PC Reviewer Award** at the 21st International Conference on Mining Software Repositories (MSR 2024).

2024 Nomination for **ACM SIGSOFT Distinguished Paper Award** at the 31st ACM International Conference on the Foundations of Software Engineering (FSE 2024).

2023 Nomination for **ACM SIGSOFT Distinguished Paper Award** at the 45th IEEE/ACM International Conference on Software Engineering (ICSE 2023).

2022 **IEEE TCSE Distinguished Paper Award** at the 29th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER 2022).

2021 **First Prize**, Project Dazzle, AI Camp Hackathon

2016 **First Prize - Public Voting Category**, IIITV Hackathon

Travel Awards:

2024 ACM SIGSOFT CAPS Travel Grant of USD 500 for FSE 2024.

2023 NSF Student Travel Grant for MAPS Workshop 2023.

2023 ACM SIGSOFT CAPS Travel Grant of USD 400 for ESEC/FSE 2023.

2023 ACM SIGSOFT CAPS Travel Grant of USD 500 for ICSE 2023.

Paper Submissions

[13] **Aashish Yadavally**, Phat Nguyen, and Tien N. Nguyen. 2025. Reason, Minimize, and Solve: Analyzing Infeasible String Constraint Systems.

[12] **Aashish Yadavally**[*1], Xiaokai Rong[*], and Tien N. Nguyen. 2025. Approximate, Refine, and Analyze: Towards Comprehensive Partial Program Analysis.

Publications

Published 11 peer-reviewed papers accepted at top-tier venues in software engineering (ICSE, ESEC/FSE, ASE, SANER), and programming languages (OOPSLA).

[11] **[FSE'24]** **Aashish Yadavally**, Yi Li, and Tien N. Nguyen. 2024. Predictive Program Slicing via Execution Knowledge-Guided Dynamic Dependence Learning. In 31st ACM International Conference on the Foundations of Software Engineering.
★ ***Nomination for*** **ACM SIGSOFT Distinguished Paper Award**

[10] **[OOPSLA'24]** **Aashish Yadavally**, Yi Li, Shaohua Wang and Tien N. Nguyen. 2024. A Learning-Based Approach to Static Program Slicing. In Proceedings of the 2024 ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications. (*To Appear*).

[9] **[FORGE'24]** Hridya Dhulipala, **Aashish Yadavally**[§2], and Tien N. Nguyen. 2024. Planning to Guide LLM for Code Coverage Prediction. In 1st International Conference on AI Foundation Models and Software Engineering. (*To Appear*).

[8] **[ICSE'24]** Yuchen Cai, **Aashish Yadavally**, Abhishek Mishra, Genesis Montejo, and Tien N. Nguyen. 2024. Programming Assistant for Exception Handling with CodeBERT. In 46th IEEE/ACM International Conference on Software Engineering.

[7] **[ESEC/FSE'23]** Yi Li, **Aashish Yadavally**, Jiaxing Zhang, Shaohua Wang, and Tien N. Nguyen. 2023. DeMinify: Neural Variable Name Recovery and Type Inference. In 30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering.

[6] **[ESEC/FSE'23]** Yi Li, **Aashish Yadavally**, Jiaxing Zhang, Shaohua Wang, and Tien N. Nguyen. 2023. Commit-Level, Neural Vulnerability Detection and Assessment. In 30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering.

[5] **[ICSE'23]** **Aashish Yadavally**, Wenbo Wang, Shaohua Wang, and Tien N. Nguyen. 2023. (Partial) Program Dependence Learning. In 45th IEEE/ACM International Conference on Software Engineering.
★ ***Nomination for*** **ACM SIGSOFT Distinguished Paper Award**

[4] **[ICSE'23]** Wenbo Wang, Tien N. Nguyen, Shaohua Wang, Yi Li, Jiyuan Zhang, and **Aashish Yadavally**. 2023. DeepVD: Towards Class-Separation Features for Neural Network Vulnerability Detection. In 45th IEEE/ACM International Conference on Software Engineering.

[3] **[ASE'22]** Anh Nguyen, **Aashish Yadavally**, and Tien N. Nguyen. 2022. Next Syntactic-Unit Code Completion and Applications. In 37th IEEE/ACM International Conference on Automated Software Engineering: New Ideas and Emerging Results (NIER) Track.

[2] **[ASE'22]** Hoan Anh Nguyen, Hung Phan, Samantha Syeda Khairunnesa, Son Nguyen, **Aashish Yadavally**, Shaohua Wang, Hridesh Rajan, and Tien N. Nguyen. 2022. A Hybrid Approach for Inference between Behavioral Exception API Documentation and Implementations, and Its Applications. In 37th IEEE/ACM International Conference on Automated Software Engineering.

[1] * denotes equal contribution.
[2] § denotes mentoring experience.

[1] **[SANER'22]** Thang V. Nguyen, **Aashish Yadavally**, and Tien N. Nguyen. 2022. Phrase2Set: Phrase-to-Set Machine Translation and Its Software Engineering Applications. In 29th IEEE International Conference on Software Analysis, Evolution and Reengineering.
★ IEEE TCSE Distinguished Paper Award

MS Thesis **Aashish Yadavally**. 2020. An Exploration of Machine Learning Based Day-Ahead Solar Irradiance Forecasting Methodologies. In University of Georgia ProQuest Dissertations Publishing.

Talks and Presentations

Invited Talks:

01/2024 "*Contextuality of Code Representation Learning*", at the Trux Open Online Seminar (TOOS), University of Luxembourg.

Paper Presentations:

01/2024 "*DeMinify: Neural Variable Name Recovery and Type Inference*" [7], at ESEC/FSE 2023.

01/2024 "*Commit-level, Neural Vulnerability Detection and Assessment*" [6], at ESEC/FSE 2023.

05/2023 "*(Partial) Program Dependence Learning*" [5], at ICSE 2023.

05/2023 "*DeepVD: Toward Class-Separation Features for Neural Network Vulnerability Detection*" [4], at ICSE 2023.

10/2022 "*Next Syntactic-Unit Code Completion and Applications*" [3], at ASE 2022.

03/2022 "*Phrase2Set: Phrase-to-Set Machine Translation and Its Software Engineering Applications*" [1], at SANER 2022.

Poster Presentations:

05/2023 "*(Partial) Program Dependence Learning*", at ICSE 2023.

12/2019 "*Sentiment Analysis-Based Language Model Evaluation*", at The Linguistics Final Project Poster Conference.

10/2019 "*Solar Irradiance Prediction Using Distributed Machine Learning Techniques*", at UGA Computer Science Research Day.

Work Experience

2024* **Applied Scientist Intern**, *Amazon*.
Builder Tools Science / Next Gen Developer Experience

2022 – 2024 **Graduate Research Assistant**, *The University of Texas at Dallas*.
AI for Software Engineering — *Advisor*: Dr. Tien N. Nguyen

2021 **Data Scientist Intern**, *AI Camp Inc.*.

2020 – 2022 **Graduate Teaching Assistant**, *The University of Texas at Dallas*.
Department of Computer Science

2018 – 2020 **Graduate Research Assistant**, *The University of Georgia*.
Institute for Artificial Intelligence — *Advisor*: Dr. Frederick Maier

2018 **Undergraduate Research Assistant**, *IIIT Hyderabad*.
Language Technologies Research Center — *Advisor*: Dr. Anil Kumar Vuppula

2017 **Undergraduate Research Assistant**, *DA-IICT Gandhinagar*.
Speech Research Lab — *Advisor*: Dr. Hemant A. Patil

Academic Service

MSR 2024 **Junior Program Committee**, *Technical Track*.
International Conference on Mining Software Repositories.
★ **Distinguished Junior PC Reviewer Award**

Journal **Reviewer**.
IEEE Transactions on Audio, Speech and Language Processing.

ICSE 2024 **Program Committee**, *Artifact Evaluation Track*.
International Conference on Software Engineering

MSR 2023 **Junior Program Committee**, *Technical Track*.
International Conference on Mining Software Repositories.

Teaching

Spring 2022 **Teaching Assistant**, *The University of Texas at Dallas*.
Department of Computer Science
CS 4341 - Digital Logic and Computer Design

Fall 2021 **Teaching Assistant**, *The University of Texas at Dallas*.
Department of Computer Science
CS 4341 - Digital Logic and Computer Design

Spring 2021 **Teaching Assistant**, *The University of Texas at Dallas*.
Department of Computer Science
CS 4384 - Automata Theory

Fall 2020 **Teaching Assistant**, *The University of Texas at Dallas*.
Department of Computer Science
CS 3341 - Probability and Statistics in Computer Science and Software Engineering
CS 6301 - Convolutional Neural Networks