

# Aashish Yadavally

Ph.D. Candidate  
Department of Computer Science  
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## Overview

I am a researcher in the field of Artificial Intelligence for Software Engineering (AI4SE, a coalescence between AI and SE), specializing in optimizing software processes. My recent work focuses on using (large) language models for understanding program behaviors, and improving software security.

*Focus Areas:* AI for {Program Analysis, Software Security, Software Evolution}

## Education

- 2020 – 2025\* **Doctor of Philosophy**, Computer Science  
The University of Texas at Dallas *Advisor:* Dr. Tien N. Nguyen  
*Dissertation:* “Learning to Analyze Program Behaviors”  
*Doctoral Committee:* Dr. Baishakhi Ray, Dr. Wei Yang, Dr. Shiyi Wei
- 2018 – 2020 **Master of Science**, Artificial Intelligence  
The University of Georgia *Advisor:* Dr. Frederick Maier  
*Thesis:* Machine Learning Techniques for Solar Irradiance Prediction
- 2014 – 2018 **Bachelor of Technology**, Computer Science  
Indian Institute of Information Technology Vadodara *Advisor:* Dr. Anil Vuppula  
*Capstone Project:* “Automatic Speech Recognition using Deep Learning”

## Honors & Awards

### Paper Awards

- 2024 **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).

### Recognition

- 2024 **Distinguished Junior PC Reviewer Award** at the 21st International Conference on Mining Software Repositories (MSR 2024).
- 2021 *First Prize*, Project Dazzle, AI Camp Hackathon
- 2016 *First Prize in Public Voting Category*, IIITV Hackathon

### Grants & Scholarships

- {2024, 2023} ACM SIGSOFT CAPS Travel Award of USD 500 for FSE 2024, USD 400 for ESEC/FSE 2023, and USD 500 for ICSE 2023.
- 2023 NSF Student Travel Grant for MAPS Workshop 2023.
- 2019 – 2020 *Research Scholarship* including a full tuition remission, from the *Institute for Artificial Intelligence* at the University of Georgia (one of three chosen M.S. students).
- 2018 – 2019 *Research Scholarship* including a full tuition remission, from the *Institute for Artificial Intelligence* at the University of Georgia (one of three chosen M.S. students).

## Publications

(\* denotes *equal contribution*, § denotes *mentorship experience*)

Published 14 peer-reviewed papers (11 full, 3 short)<sup>1</sup>accepted at top-tier venues in software engineering (ICSE, FSE, ASE), and programming languages (OOPSLA). My work can be categorized into the following thrusts of research:

- [T1] LLMs for Reasoning on Source Code (C11, C12, U1, U2, U3)
- [T2] Artificial Intelligence for Program Analysis (C5, C6, J1, J2, U2)
- [T3] Artificial Intelligence for Software Security (C4, C7, C8, C9, C10)
- [T4] Source Code Manipulation for Software Engineering Applications (C1, C2, C3)

### ► Journal Papers .....

- [J2] [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.
- [J1] [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.  
★ ACM SIGSOFT Distinguished Paper Award

### ► Conference Papers .....

- [C12] [ICSE'25] Smit Patel, **Aashish Yadavally**§, Hridya Dhulipala and Tien N. Nguyen. 2024. Planning a Large Language Model for Static Detection of Runtime Errors in Code Snippets. In 47th IEEE/ACM International Conference on Software Engineering. (To Appear).
- [C11] [FORGE'24] Hridya Dhulipala, **Aashish Yadavally**§, and Tien N. Nguyen. 2024. Planning to Guide LLM for Code Coverage Prediction. In 1st International Conference on AI Foundation Models and Software Engineering.
- [C10] [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.
- [C9] [ICSE'24 - Poster] Yi Li, Tien N. Nguyen, Yuchen Cai, **Aashish Yadavally**, Abhishek Mishra, and Genesis Montejo. 2024. Neural Exception Handling Recommender. In 46th IEEE/ACM International Conference on Software Engineering: Posters Track.
- [C8] [ICSE'24 - Poster] Yi Li, Tien N. Nguyen, Shaohua Wang, and **Aashish Yadavally**. 2024. Poirot: Deep Learning for API Misuse Detection. In 46th IEEE/ACM International Conference on Software Engineering: Posters Track.
- [C7] [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.

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<sup>1</sup>Full papers indicated with  , and short papers with

- [C6] **[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.
- [C5] **[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*
- [C4] **[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.
- [C3] **[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.
- [C2] **[ASE'22 - NIER]** 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.
- [C1] **[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*

► **Conference Papers – Submitted, Under Review** .....

- [U3] **Aashish Yadavally**, Hoan Nguyen, Laurent Callot, and Gauthier Guinet. 2025. Large Language Model Critics for Execution-Free Evaluation of Code Changes.
- [U2] **Aashish Yadavally**<sup>\*</sup>, Xiaokai Rong<sup>\*</sup>, and Tien N. Nguyen. 2025. Approximate, Refine, and Analyze: Toward Comprehensive Partial Program Analysis.
- [U1] **Aashish Yadavally**, Xiaokai Rong, Phat Nguyen, and Tien N. Nguyen. 2024. Large Language Models for Safe Minimization of Infeasible String Constraint Systems.

► **Masters Thesis** .....

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

## Research Experience

- 2024 **Applied Scientist Intern, AWS AI Labs**.  
Builder Tools Science / Next Gen Developer Experience
  - *Hosted By:* Gauthier Guinet, Hoan A. Nguyen
  - Designed LLM-based critics for a well-structured and execution-free evaluation of complex, repository-level code changes produced by agentic workflows [U3].

- 2022 – 2024 **Graduate Research Assistant**, *The University of Texas at Dallas*.  
AI for Software Engineering Advisor: Dr. Tien N. Nguyen
- Applied learning-based techniques and LLM reasoning to analyze (partial) program behaviors, with a focus on improving the security of software systems.
  - Guided junior researchers in our lab through collaborative problem solving and one-on-one mentoring sessions, offering support in navigating complex research challenges.
- 2018 – 2020 **Graduate Research Assistant**, *The University of Georgia*.  
Institute for Artificial Intelligence Advisor: Dr. Frederick Maier
- *Topic*: Machine Learning Techniques for Solar Irradiance Prediction
  - Developed a predictive modeling framework for solar irradiance leveraging ~2.5TB of historical weather forecast and solar farm data from the University of Georgia.
- 2018 **Undergraduate Research Assistant**, *IIIT Hyderabad*.  
Language Technologies Research Center Advisor: Dr. Anil Kumar Vuppula
- *Topic*: Automatic Speech Recognition Using Deep Learning
  - Gained expertise in designing end-to-end neural network architectures for speech tasks.

## Teaching Experience

- 2024 **Graduate Teaching Assistant**, *The University of Texas at Dallas*.
- 2020 – 2022
- {Fall 2024, Spring 2021} - Automata Theory
  - {Spring 2022, Fall 2021} - Digital Logic and Computer Design
  - {Fall 2020} - Probability and Statistics in Computer Science and Software Engineering
  - {Fall 2020} - Convolutional Neural Networks
- 2021 **Associate Instructor**, *A.I. Camp*.  
*Courses*: Natural Language Processing, Computer Vision<sup>2</sup>

## Mentorship Experience

- 2024 – 2025\* **Marilyn Rego**, *Purdue University*.  
SIGPLAN-M Mentee
- 2024 – 2025\* **Akshit Kumar**, *International Institute of Information Technology, Hyderabad*.  
SIGPLAN-M Mentee
- 2023 **Abhishek Mishra**, *The University of Texas at Dallas*.  
Undergraduate Student  
1 co-authored publication at International Conference on Software Engineering (ICSE'24)
- 2023 **Genesis Montejo**, *The University of Texas at Dallas*.  
Undergraduate Student  
1 co-authored publication at International Conference on Software Engineering (ICSE'24)

## Talks & Presentations

### Invited Talks

- 01/2024 “Contextuality of Code Representation Learning”.  
Trux Open Online Seminar (TOOS), University of Luxembourg  
*Hosts*: Prof. Dr. Jacques Klein, Prof. Dr. Tegawendé Bissyandé
- 06/2024 “Learning to Analyze Program Behaviors”, **Doctoral Symposium - FSE 2024**.

### Paper Presentations

- 10/2024 “A Learning-Based Approach to Static Program Slicing”, **OOPSLA 2024**.

<sup>2</sup>Average daily rating of 4.61, 4.6, and 4.81 out of 5 across three batches

- 06/2024 “Predictive Program Slicing via Execution Knowledge-Guided Dynamic Dependence Learning”, **FSE 2024**.
- 01/2024 “Commit-level, Neural Vulnerability Detection and Assessment”, **ESEC/FSE 2023**.
- 01/2024 “DeMinify: Neural Variable Name Recovery and Type Inference”, **ESEC/FSE 2023**.
- 05/2023 “(Partial) Program Dependence Learning”, **ICSE 2023**.
- 05/2023 “DeepVD: Toward Class-Separation Features for Neural Network Vulnerability Detection”, **ICSE 2023**.
- 10/2022 “Next Syntactic-Unit Code Completion and Applications”, **ASE 2022**.
- 03/2022 “Phrase2Set: Phrase-to-Set Machine Translation and Its Software Engineering Applications”, **SANER 2022**.

### **Poster Presentations**

- 06/2024 “Predictive Program Slicing via Execution Knowledge-Guided Dynamic Dependence Learning”, **FSE 2024**.
- 05/2023 “(Partial) Program Dependence Learning”, **ICSE 2023**.
- 12/2019 “Sentiment Analysis-Based Language Model Evaluation”.  
The Linguistics Final Project Poster Conference, University of Georgia
- 10/2019 “Solar Irradiance Prediction Using Distributed Machine Learning Techniques”.  
UGA Computer Science Research Day

### **Academic Service**

- ICLR 2025 **Reviewer**, *Research Track*.  
*International Conference on Learning Representations*
- ICSE 2025 **Shadow Program Committee**, *Technical Track*.  
*International Conference on Software Engineering*
- MSR 2024 **Junior Program Committee**, *Technical Track*.  
*International Conference on Mining Software Repositories*.  
★ Distinguished Junior PC Reviewer Award
- 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*.
- SIGPLAN-M **Mentor**.  
*Special Interest Group in Programming Languages*.
- TSE **Reviewer**.  
(Journal) *IEEE Transactions on Software Engineering*.