Aaditya Naik

⊠ asnaik@seas.upenn.edu | ☐ aaditya-naik | ♀ aadityanaik | ♦ seas.upenn.edu/~asnaik Research Interests: Scalable Neurosymbolic Programming, Differentiable Reasoning,

Program Synthesis, AI for SE

EDUCATION

University of Pennsylvania Ph. D., Computer and Information Science

Sept. 2020 – Present

 NMIMS Mukesh Patel School of Tech. Mgmt. and Engg. (MPSTME)

 B. Tech., Computer Engineering
 July 2016 - May 2020

PUBLICATIONS

* Co-first author

Dolphin: A Programmable Framework for Scalable Neurosymbolic Learning Additya Naik, Jason Liu, Claire Wang, Amish Sethi, Saikat Dutta, Mayur Naik, Eric Wong Submitted to ICML '25

Where's the Bug? Attention Probing for Scalable Fault Localization Adam Stein, Arthur Wayne, Aaditya Naik, Mayur Naik, Eric Wong Submitted to ICML '25

TorchQL: A Programming Framework for Integrity Constraints in Machine Learning

Aaditya Naik, Adam Stein, Yinjun Wu, Mayur Naik, Eric Wong Proceedings of OOPSLA '24

Towards Compositionality in Concept Learning. Adam Stein, Aaditya Naik, Yinjun Wu, Mayur Naik, Eric Wong Proceedings of ICML '24

LLM-Based Test-Driven Interactive Code Generation: User Study and Empirical Evaluation.

Sarah Fakhoury, **Aaditya Naik**, Georgios Sakkas, Saikat Chakraborty, Shuvendu K. Lahiri *IEEE Transactions on Software Engineering '24 (Volume 50, Issue 9)*

Relational Query Synthesis \bowtie Decision Tree Learning Aaditya Naik, Aalok Thakkar, Adam Stein, Mayur Naik, Rajeev Alur Proceedings of VLDB '24

Do Machine Learning Models Learn Statistical Rules Inferred from Data? Additya Naik, Yinjun Wu, Mayur Naik, Eric Wong Proceedings of ICML '23

Learning to Walk over Relational Graphs of Source Code. Pardis Pashakhanloo, Aaditya Naik, Hanjun Dai, Petros Maniatis, Mayur Naik Proceedings of DL4C Workshop @ ICLR '22

CodeTrek: Flexible Modeling of Code using an Extensible Relational Representation.

Pardis Pashakhanloo, **Aaditya Naik**, Yuepeng Wang, Hanjun Dai, Petros Maniatis, Mayur Naik *Proceedings of ICLR '22*

Sporq: An Interactive Environment for Exploring Code Using Query-by-Example.

Aaditya Naik, Jonathan Mendelson, Nathaniel Sands, Yuepeng Wang, Mayur Naik, Mukund Ragothaman
 Proceedings of UIST '21

Example-Guided Synthesis of Relational Queries.

Aalok Thakkar, **Aaditya Naik**, Nate Sands, Mukund Raghothaman, Mayur Naik, Rajeev Alur *Proceedings of PLDI '21*

GenSynth: Synthesizing Datalog Programs without Language Bias. Jonathan Mendelson*, Aaditya Naik*, Mukund Ragothaman, Mayur Naik Proceedings of AAAI '21

Code2Inv: A Deep Learning Framework for Program Verification.

Xujie Si^{*}, **Aaditya Naik**^{*}, Hanjun Dai, Mayur Naik, Le Song *Proceedings of CAV '20*

WORK EXPERIENCE

Microsoft Research

Summer Research Intern

- Formalized the problem for interactive test-driven code generation, potential solutions and workflows, and evaluated it at scale.
- Conducted comprehensive studies of its impact on the Codex model.

University of Pennsylvania

Research Intern

- Worked on a project *Code2Inv* to make it compatible with various input representations including C programs and CHC constraints.
- Conducted a comprehensive study on the state-of-the-art software checkers.
- Implemented an SSA transformation for Code2Inv benchmarks using the Clang C++ API.

GetParking

Summer Intern

- Used transfer learning to build a deep learning model based on the InceptionV3 architecture to identify the make and model of a car given its image.
- Thoroughly reviewed existing state-of-the-art image classification models.

AWARDS

Google PhD Fellowship

TEACHING EXPERIENCE

University of Pennsylvania

Teaching Assistant

• TA for CIS 547: Software Analysis for Summer and Fall 2020 which covers concepts including static and dynamic analyses, symbolic executors and automated debugging.

ACM Student Chapter, MPSTME

Instructor

• Taught core C concepts to college freshman students over a 4 day workshop.

Jan. 2019 – May 2020

May 2018 - Jul. 2018

June 2021 - Sept. 2021

2023 - Present

Sep. 2019

May 2020 - Aug 2023

Skills

Programming Languages : Python, C/C++, Bash, Java

 $\mathbf{Tools:} \; \mathrm{Git,} \; \mathrm{L\!A\!T}_{\!E\!} \mathrm{X}, \; \mathrm{Docker}$

Miscellaneous : LLVM/Clang, PyTorch, Keras/TensorFlow, Z3

References

Mayur Naik (PhD Advisor)
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Computer and Information Science
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Mukund Ragothaman

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