

Aaditya Naik

✉ asnaik@seas.upenn.edu |  aaditya-naik |  aadityanaik |  seas.upenn.edu/~asnaik

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

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

Pardis Pashakhanloo, Aaditya Naik, Yuepeng Wang, Hanjun Dai, Petros Maniatis, Mayur Naik
To appear in 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 Ragothaman, 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

University of Pennsylvania

Research Intern

Jan. 2019 – May 2020

- 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

May 2018 – Jul. 2018

- 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.

TEACHING EXPERIENCE

University of Pennsylvania

Teaching Assistant

May 2020 – Present

- 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

Sep. 2019

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

Sporq

An interactive extension to VS Code for exploring code using query-by-example. It provides a flexible, easy-to-use and familiar interface to allow developers to conveniently synthesize custom program analyzers over their code.

GenSynth

gensynth.cis.upenn.edu

A genetic algorithm which synthesizes Datalog queries given a set of input and output data without requiring language biases.

Code2Inv

code2inv.org

A general end-to-end deep reinforcement learning framework which learns a valid loop invariant for any given verification task in a manner similar to how a human expert would learn the invariant.

SKILLS

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

Tools : Git, L^AT_EX, Docker

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

REFERENCES

Mayur Naik (PhD Advisor)

Professor and Graduate Chair

Computer and Information Science

University of Pennsylvania

✉ mhnaik@seas.upenn.edu

☎ 215-573-1856

Mukund Ragothaman

Assistant Professor

Department of Computer Science

University of Southern California

✉ raghotha@usc.edu

☎ 213-821-0853