

# Aaditya Naik

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## 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*

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## PUBLICATIONS

\* Co-first author

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

Aaditya Naik, Jonathan Mendelson, Nathaniel Sands, Yuepeng Wang, Mayur Naik, Mukund Raghothaman

*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 Raghothaman, 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*

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## 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.
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## 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.

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## SKILLS

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

**Tools :** Git, L<sup>A</sup>T<sub>E</sub>X, Docker

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

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## REFERENCES

**Mayur Naik** (PhD Advisor)

Professor and Graduate Chair

Computer and Information Science

University of Pennsylvania

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**Mukund Ragothaman**

Assistant Professor

Department of Computer Science

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