MANASVI SAXENA

(571) · 442 · 1509 • msaxena2@illinois.edu • github.com/msaxena2

RESEARCH INTERESTS

Programming Language Semantics, Static and Dynamic Analysis, Language Independent Formal Verification and Debugging. Development of Mathematically Rigorous tools with Practical Applications

EDUCATION

M.S. Computer Science, University of Illinois – Urbana Champaign May 2018

- Relevant Coursework - Formal Methods of Software Development, Runtime Verification, Logic in Computer Science, Cryptocurrency Security
- GPA - 3.86/4.0

B.S. Computer Science, University of Illinois – Urbana Champaign May 2015

- Relevant Coursework - Programming Languages and Compilers, Fundamental Algorithms, Theory of Computation, Computer Networking, Artificial Intelligence
- GPA - 3.38/4.0

EXPERIENCE

Formal Systems Laboratory, University of Illinois August 2016 - Current
Researcher Assistant *Urbana, IL*

- Implementing a Proof Assistant for the K Semantics Framework.
- K (github.com/kframework/k) is a rewrite based semantics framework in which programming languages can be defined using configurations, computations and rules. Proof Assistant will be used to prove program correctness, using the implementation of Matching Logic in K.

Runtime Verification Inc., Urbana, Illinois July 2015 - May 2016
Software Engineer *Urbana, IL*

- Worked on a team developing a dynamic analysis tool for finding undefined behavior in C programs, using formal semantics of C.
- Worked on improving tool's performance, and evaluated its applications on large codebases.

Formal Systems Laboratory, University of Illinois August 2014 - May 2015
Undergraduate Researcher *Urbana, IL*

- Developed a Semantics based Debugger for the K Semantics Framework.
- Debugger helps users find bugs in formal semantics defined in K. Allows users to step through the execution of their program, examine the state space, configurations, and rules among other features.

Coordinated Science Lab, University of Illinois Summer 2014
Undergraduate Researcher *Urbana, IL*

- Worked on visualization of a large dataset containing records of faulty medical devices by the Food and Drug Administration (FDA).
- Created an interactive web application that displays the visualizations using PHP/Javascript.

PROJECTS

EVM Semantics in K github.com/kframework/evm-modeling

- Part of team working on formalizing the semantics of the Ethereum ecosystem in K.
- Lead the effort of using the formal semantics for verifying correctness of Smart Contracts on the EVM blockchain.

K Semantics Framework github.com/kframework/k

- Core developer. In charge of developing debugging capabilities, and maintaining the rewrite engine.

RELEVANT PUBLICATIONS

Dwight Guth, Chris Hathhorn, Manasvi Saxena, and Grigore Rosu. Rv-match: Practical semantics-based program analysis. In *Computer Aided Verification - 28th International Conference, CAV 2016, Toronto, ON, Canada, July 17-23, 2016, Proceedings, Part I*, volume 9779 of *LNCS*, pages 447–453. Springer, July 2016

TECHNICAL SKILLS

Programming Languages	Java, Scala, Python, C, C++, OCaml
Miscellaneous	Git, Intellij IDEA, Eclipse, PyCharm, LaTeX