Rachit Nigam

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Education

University of Massachusetts Amherst

Bachelors in Computer Science and Mathematics | Honors Student *2015 - 2018*

- GPA: *4.00/4.00*
- Relevant Coursework: *Advanced Programming Languages (Graduate)*, *Programming Languages (Graduate)*, *Theory of Computation*, *Advanced Logic in CS*
- Received Chancellor's scholarship of the highest award value for outstanding academic achievements in high school.

Skills

- Programming Languages: *TypeScript, JavaScript, Scala, OCaml, Racket, Make, Java, Python, Pyret*
- Tools: *git, sbt, Z3, vim, tmux, emacs, Docker*
- Frameworks: *Node.js, scala.js*
- Platforms: *Ubuntu, Debian, Mac OS*
- Areas of Experience: *Debugging Abstractions, Information Flow Control, Dynamic Code Analysis*

Experience

Brown PLT, Brown University

Visiting Researcher *05/2016 - 08/2016*

- Developed Stopify, a source to source compiler for JavaScript that provides common debugging abstractions like stopping, stepping and break-pointing, etc. in a browser based IDE for languages that compile to JavaScript.
- Wrote a compiler back end for the Pyret programming language and integrated it with Stopify.

PLASMA, University of Massachusetts Amherst

Research Assistant *09/2016 - Present*

- Developed Fission, a dynamic tier splitting tool for JavaScript that allows users to write a single program for a web application, instead of two in the traditional tiered application. Implemented dynamic code splitting techniques that preserve security guarantees for private data through Information Flow Control.
- Developed a code synthesis tool for Puppet, a system configuration language, that generates edits for the program using constraints generated by user interaction in the shell. Encoded semantics of Puppet using Z3, a theorem prover by Microsoft, in order to generate edits.

Honors & Awards

Honors Research Fellowship

Commonwealth Honors College, UMass Amherst *01/2017*

- Recipient of honors fellowship to conduct research over the semester of Spring 2017.

MITRE Best Project in Public Interest, Overall Finalist

HackUMass IV *10/2016*

- Developed a working application that analyzes a live feed and maps it to a set of possible situations. Made use of Clarifai's API to generate probabilities for image tags. Created and implemented a statistical inference algorithm to infer the situation using the probabilities for the image tags.

Mentoring Workshop Scholarship

Programming Languages Mentoring Workshop at ICFP 2016 *09/2016*

- Awarded scholarship by SIGPLAN to attend the Programming Languages Mentoring Workshop held at the International Conference on Functional Programming 2016 held in Nara, Japan.