

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
- Research Interests: Dynamic Languages, Language Abstractions, Security, Large scale computing

Publications

Putting in All the Stops: Execution Control for JavaScript

In submission to PLDI 2018

Samuel Baxter, Rachit Nigam, Arjun Guha, Joe Gibbs Politz, Shriram Krishnamurthi

In Submission at the *ACM SIGPLAN Conference on Programming Language Design and Implementation*.

Fission: Secure Dynamic Code-Splitting for JavaScript

SNAPL 2017

Arjun Guha, Jean-Baptiste Jeannin, Rachit Nigam, Jane Tangen, Rian Shambaugh

In *Summit oN Advances in Programming Languages*.

Experience

Brown PLT, Brown University

VISITING RESEARCHER

05/2017 - 08/2017

- Developed STOPIFY, a source to source compiler for JavaScript that provides common debugging abstractions like stopping, stepping and break-pointing, 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 for work on FISSION, a dynamic and secure tier splitting tool for JavaScript.

MITRE Best Project in Public Interest, Overall Finalist

HACKUMASS IV

10/2016

- Built a web application that analyzes a live feed and maps it to a set of possible situations. Implemented a statistical inferences to map image tags to possible situations.

ICFP Travel 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 (ICFP) 2016 held in Nara, Japan.

Chancellor's Scholarship

UNIVERSITY OF MASSACHUSETTS, AMHERST

09/2015 - 05/2018

- Received Chancellor's scholarship of the highest award value for outstanding academic achievements in high school.