Vaibhav Mehta

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Education

Cornell University , PhD. in Computer Science — Sept 2023 – Ongoing
- *Advisor:* Justin Hsu
- *Coursework:* Kleene Algebra, Program Synthesis, Optical Networking, Formal Methods for Robotics

Princeton University, AB in Computer Science — Sept 2019 – May 2023
Magna cum laude

Publications and Preprints

Type Systems for Exchangeability — In Submission
Vaibhav Mehta, Justin Hsu
In Submission to POPL '26

A Hoare Logic for Program Symmetries — OOPSLA '25
Vaibhav Mehta, Justin Hsu
To appear at ACM SIGPLAN Conference on Object Oriented Programming: Systems, Languages, and Applications (OOPSLA), Singapore.

A Generic Methodology for the Modular Verification of Security Protocol Implementations — CCS '23
Linard Arquint, Malte Schwerhoff, Vaibhav Mehta, Peter Müller
Proceedings of the 2023 ACM SIGSAC Conference on Computer and Communications Security Pages 1377 - 1391
https://doi.org/10.1145/3576915.3623105

SwitchLog: A Logic Programming Language for Network Switches — PADL '23
Vaibhav Mehta, Devon Loehr, John Sonchack David Walker
Distinguished Paper
In Practical Aspects of Declarative Languages. PADL 2023. Lecture Notes in Computer Science, vol 13880.

Decidability of an Array Separation Logic fragment with Data Constraints — Senior Thesis '23
Vaibhav Mehta
Undergraduate Senior Thesis

Research Experience

Graduate Research Assistant — Sept 2022–May 2023
Advised By: Prof. Justin Hsu
- PhD. Student investigating symmetry properties of programs.
- Papers accepted to OOPSLA '25, and in submission to POPL '26.

Senior Thesis — Sept 2022–May 2023
Advised By: Prof. Zachary Kincaid
- Investigated the decidability of a new fragment of Array Separation Logic to design a new type of analysis to reason about memory safety and logical contents of arrays directly.
- Designed and implemented a decision procedure for a fragment of this logic.

Summer Student Research Fellow, ETH Zurich, Switzerland — Jun 2022–Aug 2022
Advised By: Prof. Peter Mueller
- Used Separation Logic to design a new method of verifying cryptographic protocols and implemented a library for the same in VeriFast.
- Paper titled "A Generic Methodology for the Modular Verification of Security Protocol Implementations" in Submission to Security and Privacy 2023 accepted to CCS 2023

Junior Independent Work, Princeton University, NJ — Jan 2022–June 2022

Advised By: Prof. David Walker

- Designed a new declarative language for Network Switches called SwitchLog
- Paper titled "SwitchLog: A Logic Programming Language for Network Switches" accepted to PADL 2023
- Presented at PADL co-located with POPL 2023 in Boston

Teaching Experience

Teaching Assistant Cornell University — Fall 2023 - Spring 24
CS 3110: Data Structures and Functional Programming

Teaching Assistant Princeton University
COS 226: Data Structures and Algorithms — Fall 2020, Spring 2021
COS 217: Introduction to Programming Systems — Fall 2020, Spring 2021
COS 326: Introduction to Function Programming — Spring 2022
COS 423: Theory of Algorithms — Spring 2023

Work Experience

Intern NeuTigers — May 2021 - Aug 2021

- Worked on French open domain question answering using CamemBERT and Long Form QnA using T5
- Used the Grow and Prune Framework to synthesize lightweight Neural Network models for Glucose prediction in Diabetic Patients

Intern, Knowt Inc, NJ — May 2020 - Aug 2020

- Built Knowledge Graphs using information extraction techniques.
- Trained a ranking model to rank answers to queries.
- Created Custom low-dimensional vectors and used BERT in PyTorch to detect whether sentences could be understood without context, achieving high accuracy. (MCC score of 0.85)