Oyendrila Dobe

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Summary

I'm a PhD candidate learning and researching on **formal verification**. I am interested in opportunities involving designing and implementing of algorithms that **ensure security, correctness, and privacy guarantees of systems** based on formal reasoning.

Education

Michigan State University
Pursuing PhD in Computer Science   GPA: 3.78/4

East Lansing, Michigan, US
2018 - Present

- Taken courses in **Formal methods**, ML, Graph Theory, **Program analysis**, Theory of computation, Algorithms, Computer security.

MAKAUT
BTech in Computer Science and Engineering   GPA: 8.9/10

Kolkata, India
2013 - 2017

- Have pursued **research in classification and detection of brain tumors** from MRI scans.

Research

Formal Verification of Probabilistic Hyperproperties
Advisor: Dr. Borzoo Bonakdarpour

- **Hyperproperties** allow expression of **complex specifications** that require **simultaneous reasoning** over **multiple** model **paths**.
- We have published algorithms to solve a range of problems on these specific types of properties:
  - **Parameter Synthesis**: Finding missing parameter values in models to ensure satisfaction of given specifications.
  - **HyperPCTL**: Have been incrementally expanding this hyperlogic with reward operators, nondeterminism, asynchronicity.
  - **Exhaustive Model Checking**: An contraint-solving approach to model check HyperPCTL specifications.
  - **Statistical Model Checking** : Exploring the utility of statistical approcahes for scalable verification of pHyperLTL.
- I am the **developer** of **HyperProb**, a **prototype tool** that brings together all these algorithms.

Work Experience

Automated Reasoning @ Amazon Web Services
Applied Scientist Intern

Seattle
May - August, 2023

- **Manager**: *Aaron Tomb*; **Mentor**: *Rustan Leino*
- **Extended a prototype tool** that checks for **program equivalence** of methods **across** different **languages**.

Automated Reasoning @ Amazon Web Services
Applied Scientist Intern

New York City
June - September, 2022

- **Manager**: *Temesghen Kahsai*; **Mentor**: *Byron Cook*
- **Built a prototype tool** that utilizes combines the power of existing **automated reasoning** tools to argue about **privacy** requirement **violations** of customers' cloud setup.

Teaching Assistant
Courses Taught: Object-Oriented Programming, Data Structures, Discrete Math.

East Lansing
Fall'18, Spring'19, Fall'20, Fall'22

- Conducted **recitations, and office hours** to help students improve their understanding.
- **Lead TA** for Fall'22 for a class of **194 students**.

Infosys Limited
Systems Engineer

Mysore, India
October 2017 - May 2018

- Solely handled **implementation of leave system** for new subsidiary of the company using ABAP, directly under team leader.

Extracurricular Experience

Increasing accessibility in Tech
Mentor for after-school coding camps

Spring'22 - Present

- I volunteer as a **mentor** to **introduce** middle and high school **kids to coding**. Have been **promoted as a Graduate Advisor** due to my enthusiasm and energy.
- I am involved with Dr. Laura Dillon in **experimental research** to **access** the **impact of our program** on the kids.