# Oyendrila Dobe

✈ oyendrila.dobe@gmail.com | ⌂ https://oyendrila-dobe.github.io/ | 🎓 My publications

## 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
East Lansing, Michigan, US

PURSUING PHD IN COMPUTER SCIENCE    GPA: 3.78/4
2018 - Present

- Taken courses in **Formal methods**, ML, Graph Theory, **Program analysis**, Theory of computation, Algorithms, Computer security, Introduction to HPC (Coursera certificate).

### MAKAUT
Kolkata, India

BTECH IN COMPUTER SCIENCE AND ENGINEERING    GPA: 8.9/10
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
Seattle

APPLIED SCIENTIST INTERN
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
New York City

APPLIED SCIENTIST INTERN
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
East Lansing

COURSES TAUGHT: OBJECT-ORIENTED PROGRAMMING, DATA STRUCTURES, DISCRETE MATH.
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
Mysore, India

SYSTEMS ENGINEER
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 **Graduate advisor** for our after school coding program to **introduce** middle and high school **kids to coding**.
- I am involved with Dr. Laura Dillon in **experimental research** to **access** the **impact of our program** on the kids.