Aditi Partap

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Education

Stanford University **September 2021 - Present**
Ph.D. in Computer Science *Advisor: Dan Boneh*
Security & Cryptography

University of Illinois at Urbana-Champaign **August 2019 - May 2021**
M.S. in Computer Science *Advisor: Radhika Mittal & Brighten Godfrey*
Computer Networks & Systems

Indian Institute of Technology, Delhi **July 2014 - May 2018**
B.Tech. in Computer Science
CGPA: 9.675/10, Department Rank 1

Interests & Ongoing Research

I'm broadly interested in cryptography, and am currently working on projects related to Single Secret Leader Election and SNARKs.

Research Experience

Accountable Threshold Signatures with Proactive Refresh **Summer'22 - Fall'22**
Stanford University *Dan Boneh, Lior Rotem*

- Introduced several definitions for proactive refresh for accountable threshold signatures (ATS), with different levels of security.
- Constructed a hybrid ATS with proactive refresh that achieves strong security, and more practical schemes from BLS and Schnorr based ATS schemes, that achieve weaker security.

Memory Tagging: ARM MTE Pitfalls and Improvements **Winter'22**
Stanford Univerisity *Dan Boneh*

- Surveyed how modern systems use ARM MTE for memory safety, and identified potential attacks in their designs.
- Developed & experimented with a memory efficient design for ARM MTE, which strengthens its security with minor performance overheads.

DeepG2P: Fusing Multi-Modal Data to Improve Crop Production **Summer'21**
Microsoft Research *Ranveer Chandra & Anirudh Badam*

- Designed and developed a multi-modal neural network using convolution and attention mechanisms to predict agricultural yield based on seeds' DNA and environmental conditions of the farm.
- Trained and evaluated the model on Genome to Fields Maize dataset, and achieved 13-45% better prediction on unseen fields than existing methods.

On-Device CPU Scheduling for Sense-React Systems **Fall'19 - Spring'21**
University of Illinois at Urbana Champaign *Brighten Godfrey & Radhika Mittal*

- Developed a scheduling framework to manage compute resource allocation for sense - react systems, which dynamically adapts to variations in application requirements as well as available resources.
- Integrated the framework with ROS and ILLIXR (open source platforms for robotics and AR/VR) and improved performance for face tracking, robot navigation and VR applications.

Answering POI-recommendation Questions using Tourism Reviews **Fall'17 - Spring'18**
Indian Institute of Technology, Delhi *Mausam & Parag Singla*

- Built an AI system that can answer multi faceted tourism questions from a huge set of answers.
- Applied a pipeline of NLP tools to extract correct entities from free text answers collected with online travel forum posts to curate a large 48k sized dataset.
- Designed & implemented a neural network employing LSTMs and attention mechanism & implemented a few OpenQA based research papers for baseline comparison.

Publications

1. Dan Boneh, *Aditi Partap*, Lior Rotem. "Accountable Threshold Signatures with Proactive Refresh" In submission at EuroCrypt'23 (eprint)
2. *Aditi Partap*, Dan Boneh. "Memory Tagging: A Memory Efficient Design" In submission at EuroS&P'23 (arXiv)
3. Swati Sharma, *Aditi Partap*, Maria Angels de Luis Balaguer, Sara Malvar, Ranveer Chandra. "DeepG2P: Fusing Multi-Modal Data to Improve Crop Production" In submission at AISTATS'23 (arXiv)
4. Sachin Ashok, *Aditi Partap*, Ammar Tahir. "Fast and efficient lookups via data-driven FIB designs" In Proceedings of the ACM SIGCOMM Workshop on Future of Internet Routing & Addressing (FIRA), 2022
5. *Aditi Partap*, Samuel Grayson, Muhammad Huzaifa, Sarita V. Adve, Brighten Godfrey, Saurabh Gupta, Kris Hauser, Radhika Mittal. "On-Device CPU Scheduling for Sense-React Systems" In International Conference on Intelligent Robots and Systems (IROS), 2022
6. Danish Contractor, Krunal Shah, *Aditi Partap*, Parag Singla, Mausam. "Answering POI-recommendation Questions using Tourism Reviews" In Proceedings of the 30th ACM International Conference on Information & Knowledge Management (CIKM), 2021

Awards

- Stanford School of Engineering Graduate Fellowship *2021*
- NSDI 2020 Diversity grant. *2020*
- Institute Silver Medal for securing Department Rank 1 in Computer Science Dept. at IIT Delhi. *2018*
- All India Rank 7 in IIT Joint Entrance Examination (JEE Advanced) & secured 1st rank among girls. *2014*
- Among 16 students across all India to be awarded Aditya Birla Group Scholarship. *2014*
- All India Rank 208 among 1.4 million candidates appearing in JEE Mains organized in India by CBSE. *2014*
- Among Top 300 in Indian National Physics Olympiad. *2014*
- Among Top 30 in Indian National Mathematical Olympiad (INMO). *2013*
- Kishore Vaigyanik Protsahan Yojana Fellowship (KVPY) by Govt. of India. *2012-13*
- National Talent Search Examination (NTSE) scholarship (Top 1000 at National level). *2010*

Industry Experience

Email Notification System for Power BI Service **December 2018 - August 2019**
Microsoft Corporation, Vancouver, BC

- Designed and implemented an email notification system which involved adding infrastructure support, efficiently querying the back-end database to identify users with expiring subscriptions, and extensive system testing.
- Developed various front-end features to improve customer engagement for the Power BI service.

Deploying Tabular Data Models on Azure **May 2017 - July 2017**
Microsoft Corporation, Redmond

- Designed and developed a web application that allows users to deploy and visualize tabular models over their data on Azure Analysis Services.
- Used AngularJS framework to incorporate data binding and developed APIs in C# to connect to and fetch metadata from the user's database.
- Leveraged CRM solutions to integrate the app with Dynamics 365.

Activities & Service

- Designed a puzzle for ZK-Hacks III, based on the Cheon attack, that can break the security of zk-SNARKs. Used arkworks to develop the puzzle.
- Among Top 100 students selected from universities across Europe, Asia & the Americas to attend the Cornell, Maryland, Max Planck Pre-doctoral Research School (CMMRS), 2018.
- Co-chaired the Programmable networks session at HotNets'20.
- Undergraduate Teaching Assistant for Programming Languages course during Spring, 2018 and Data Structures & Algorithms course during Fall, 2017.

Skills

Rust, Python, Java, C, C++, Git, LaTeX