Talley Amir

talleyamir@gmail.com | 201.414.2830

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>> whoami
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Soon-to-be Computer Science PhD experienced in research, full stack development, and consulting, seeking a career in software development that centrally considers ethics in the impact of new technologies

EDUCATION

YALE UNIVERSITY
PhD in Computer Science
2018 - 2023
GPA: 4.00/4.00

BROWN UNIVERSITY
BSc in Applied Mathematics & Computer Science
2014 - 2018
GPA: 3.89/4.00

SKILLS

PROGRAMMING
Experienced:
Python • Java • LaTeX • Bash
Familiar:
C • C++ • GoLang • MATLAB • HTML/CSS/JavaScript/JQuery

SECURITY TOOLS
Familiar:
Tamarin • Radare2 • Wireshark • Shell commands (nmap/ncat/traceroute)

BAKING
Experienced:
French confectionery • Vegan desserts • Chocolate tempering • Fondant
Founded a licensed residential bakery in 2020 (see www.backslashcake.com)

TEACHING & MENTORSHIP

YALE UNIVERSITY
Teaching Fellow
Information Security • Cryptography • Discrete Mathematics • Software Engineering

SUMMER STEM INSTITUTE
Research Mentor
Guided high school students in computer security research projects during intensive 8-week summer program

BROWN UNIVERSITY
Head Teaching Assistant
Hired, trained, and managed a staff of 30 teaching assistants • Awarded *Senior Prize in Computer Science* for teaching service

WORK EXPERIENCE

YALE UNIVERSITY | PhD Researcher
2018 – present | New Haven, CT
- Devised a novel algorithm achieving perfect secrecy in the computation of the remainder predicate in the population protocol model, providing a crucial building block for general predicate computation in ad-hoc mobile networks
- Contributed to the development and formal analysis of algorithms that solve the well-studied consensus problem in the population protocol model, extending previous work to achieve agreement within a distributed network with authoritative sources of information (e.g. base stations) and non-binary decisions (e.g. clock synchronization)
- Collaboratively developed a stable algorithm simulating Turing machine computation using asynchronous 1-bit broadcast, allowing for arbitrary computation in networks with limited communication bandwidth
- Adapted two well-known population protocols solving population counting and input majority to use 1-bit messages (the absolute minimum possible) without increasing run time, which allows the algorithm to be performed on limited resource devices

TRAIL OF BITS | Research Intern
2021 – 2022 | New Haven, CT
- Formally verified correctness and security properties of the Bluetooth Low Energy Secure Connections pairing protocol using Tamarin, an automated cryptographic prover
- Derived theoretical degree distribution of the Bitcoin network and demonstrated close approximation to recently published empirical data

YALE OPENLABS | Full Stack Developer
2019 – 2020 | New Haven, CT
- Led the design and development of a secure account registration process for OpenClimate, an open-source blockchain-based project to support climate accounting

ERNST & YOUNG | Cyber Security Risk Consultant
2017 | New York, NY
- Drafted risk assessment tools, current events reports, and assessments of cyber-development projects; self-taught principles of PKI and IAM

PUBLICATIONS

Fast Convergence of the k-Opinion Undecided State Dynamics in the Population Protocol Model
Under Review: PODC 2023
T Amir, J Aspnes, P Berenbrink, F Biermeier, D Kaaser, C Hahn, J Lazarsfeld

Approximate Majority With Catalytic Input
Accepted: OPODIS 2020
T Amir, J Aspnes, J Lazarsfeld

Message Complexity of Population Protocols
Accepted: DISC 2020
T Amir, J Aspnes, D Doty, M Eftekhari, E Severson