Sulyab Thottungal Valapu

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Research Interests

My research revolves around understanding and counteracting Internet centralization and enhancing user privacy, using Internet measurement and protocol design as tools. Recently, I have been studying IPv6 adoption and the privacy risks and opportunities created by the shift to IPv6. Previously, I focused on decentralized reputation mechanisms for blockchain applications.

Experience

2021 –   ◇ **University of Southern California** | Graduate Teaching Assistant
• Teaching Assistant for *Fundamentals of Computation* (Spring '21, Fall '24), *Intro to Algorithms* (Fall '21), *Intro to Computer Systems* (Spring '25, Fall '25), *Intro to Computer and Network Security* (Spring '22), and *Database Systems* (Summer '24, Summer '25).

2018 – 2020   ◇ **Arista Networks** | Software Engineer
• Developed Network Layer software for Arista EOS®
• Involved in all stages of software development process including design, development, deployment, debugging and maintenance

Education

2021 –   ◇ **Ph.D., University of Southern California** Computer Science.
• Advised by Prof. John Heidemann
• Member of Analysis of Network Traffic (ANT) Lab
• GPA: 3.96/4.0

2014 – 2018   ◇ **B.Tech., IIIT Allahabad** Information Technology.
• GPA: 9.37/10. Graduated with Honors.

Publications

Conference Proceedings

1. **Sulyab Thottungal Valapu** and John Heidemann. "Towards a Non-Binary View of IPv6 Adoption". In: *Proceedings of the 2025 ACM Internet Measurement Conference*. IMC '25. to appear. New York, NY, USA: Association for Computing Machinery, Oct. 2025.

2. Dipsy Desai, Kicho Yu, and **Sulyab Thottungal Valapu**. "Geofeed Adoption and Authentication". In: *2025 IEEE Network Operations and Management Symposium (NOMS)*. ISSN: 2374-9709. May 2025, pp. 01–08. 🔗 DOI: 10.1109/NOMS57970.2025.11073659.

3. **Sulyab Thottungal Valapu**, Aritri Saha, Bhaskar Krishnamachari, Vivek Menon, and Ujjwal Guin. "Reward-Based Blockchain Infrastructure for 3D IC Supply Chain Provenance". In: *2025 IEEE International Symposium on Hardware Oriented Security and Trust (HOST)*. ISSN: 2765-8406. May 2025, pp. 370–380. 🔗 DOI: 10.1109/HOST64725.2025.11050057.

4. **Sulyab Thottungal Valapu**, Tamoghna Sarkar, Jared Coleman, Anusha Avyukt, Hugo Embrechts, Dimitri Torfs, Michele Minelli, and Bhaskar Krishnamachari. "DARSAN: A Decentralized Review System Suitable for NFT Marketplaces". In: *Blockchain – ICBC 2023*. Ed. by Qin Wang, Jun Feng, and Liang-Jie Zhang. Cham: Springer Nature Switzerland, 2023, pp. 3–20. ISBN: 978-3-031-44920-8. 🔗 DOI: 10.1007/978-3-031-44920-8_1.

Preprints

1 Alex Sotiropoulos, **Sulyab Thottungal Valapu**, Linus Lei, Jared Coleman, and Bhaskar Krishnamachari. *Crowd-SFT: Crowdsourcing for LLM Alignment*. June 2025. 🔗 DOI: `10.48550/arXiv.2506.04063`. arXiv: `2506.04063[cs]`.

Technical Reports

1 **Sulyab Thottungal Valapu** and Bhaskar Krishnamachari. *A Survey of Probabilistic Micropayment Schemes*. Tech. rep. IEEE Blockchain Technical Briefs, Mar. 2022.

Skills

Languages	◇	<u>Proficient:</u> Python • C • C++ <u>Familiar:</u> Rust • WebAssembly • Java
Tools / Technologies	◇	Linux System Programming • Virtualization (Containers, VMs) • Linux Kernel Networking Stack (incl. `netfilter`) • OpenWRT

Miscellaneous Experience

Internships

2017/05 - 2017/07	◇	**Yonsei University, South Korea** • Designed and implemented a blockchain-based protocol for intelligent autonomous vehicles to exchange messages and purchase services. • Explored the concept of blockchain branching to tackle scaling limitations

Awards and Achievements

2017	◇	Dean's Merit List, IIIT Allahabad

Activities

2017	◇	Core Team member of Hack In The North, the largest student-led hackathon in India
2022, 2023	◇	Research Coach for the Viterbi Summer Institute, a program by the USC Viterbi School of Engineering designed to offer incoming freshmen from underrepresented backgrounds an introductory research experience.

Selected Coursework

Systems	◇	Advanced Computer Networking Networked Systems in Cloud Computing Internet Measurement Autonomous Cyber-Physical Systems Applied Cryptography Network Security Operating Systems
Algorithms	◇	Advanced Analysis of Algorithms
AI	◇	Cognitive Science Natural Language Processing Artificial Intelligence