Sambhav Satija

satija.sambhav@gmail.com https://sambhav.info/ darkryder iamsambhav

Research interests: distributed systems, security

Education

University of Wisconsin-Madison *Madison, WI, USA*
Ph.D – Computer Science & Engineering *Jan. 2021 – Present*

Indraprastha Institute of Information Technology *New Delhi, India*
Bachelor of Technology – Computer Science & Engineering *Aug. 2013 – Dec. 2017*

Research Experience

Microsoft Research *Bengaluru, India*
Research Fellow (with Satya Lokam & Muthian Sivathanu) *July 2018 – Dec. 2020*

- Worked on a novel blockchain protocol lightweight enough to run on mobile devices.
  - Contributed to the protocol design – focusing on security & efficiency for low resource nodes.
  - Contributed to the implementation of the C++ server, Android client and testing infrastructure.

Microsoft Research *Bengaluru, India*
Research Intern (with Jacki O'Neill) *Jan. 2017 – July 2017*

- Developed technological interventions to improve loan adherence in low income communities.
  - Built a system for ~300 auto-rickshaw drivers (Bengaluru, India) which allowed them to intuitively understand their loan repayment progress.
  - Now a startup – ThreeWheelsUnited Fintech.

Indraprastha Institute of Information Technology *New Delhi, India*
Independent Project (with Sambuddho Chakravarty) *Aug. 2016 – Dec. 2016*

- Designed and prototyped an anonymous file sharing P2P protocol.
  - Contributed to the protocol design, including establishing private channels between peers and building a distributed score matrix.

Industry Experience

Tower Research Capital *Gurgaon, India*
Core Engineering Software Developer *Jan. 2018 – July 2018*

- Maintained a proprietary build tool which wrapped around *git*.
- Used *pyannotate* to sample call stacks and add type hints to existing code, easing refactoring.

Google *Bengaluru, India*
Software Engineering Intern *May 2016 – Jul. 2016*

- Built an API + Chrome extension which eased operations for reseller partners.
- Improved the provided technical design document – making the architecture secure and extensible.

Publications

Circumventing TLS-based HTTPS censorship
Sambhav Satija, *Rahul Chatterjee*
Workshop on Free and Open Communications on the Internet **(FOCI 2021 @ SIGCOMM 2021)**

Blockene: A High-throughput Blockchain Over Mobile Devices
Sambhav Satija, *Apurv Mehra, Sudheesh Singanamalla, Karan Grover, Muthian Sivathanu, Nishanth Chandran, Divya Gupta, Satya Lokam.*
Proceedings of the 14th Symposium on Operating Systems Design and Implementation **(OSDI 2020)**

Prayana: Intermediated Financial Management in Resource-Constrained Settings
Apurv Mehra, Srihari Muralidhar, ***Sambhav Satija****, Anupama Dhareshwar, Jacki O'Neill.*
Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems **(CHI 2018)**

Prayana: A Journey Towards Financial Inclusion
Apurv Mehra, ***Sambhav Satija****, Jacki O'Neill.*
Ninth International Conference on Information and Communication Technologies and Development **(ICTD 2017)**

Responsibilities & Misc.

2021	**Teaching Assistant** – CS354 (Machine Organization and Programming)	*UW-Madison*
2020	**Shadow PC** – EuroSys 2021	
2018	**Speaker** – Deployment strategies in the ever-changing cloud space	*Women TechMakers*
2016	**Teaching Assistant** – Data Structures and Algorithms	*IIIT-Delhi*
2015	**Teaching Assistant** – Operating Systems	*IIIT-Delhi*
2015-16	**Problem Setter** – HackCon-CTF '15/'16, Scripting Challenges v1/v3/v5	*IIIT-Delhi*

Achievements & Honors

2021	**Department RA** – Awarded CS Department summer RA	*UW-Madison*
2017	**Grand Prize Winner** – AngelHack - Bangalore	*Bangalore*
2016	**Finalist** – 3rd in Indian leg of CSAW-CTF Finals organised by NYU	*CSAW, NYU*
2015/6	**Finalist – 2015 & 2016** – Microsoft Build The Shield security CTF	*Microsoft, India*
2015	**Winner** – Pentesting security CTF by PriceWaterhouseCooper	*IIIT-Delhi*
2015	**Winner - IBM** – AngelHack, New Delhi	*New Delhi*
2015	**Winner - Pebble** – HackIndia	*Bengaluru*

Skills

Languages:	C, C++, Python, Java
Frameworks:	Django (web frameworks etc.), Android
Tools:	GNU toolchain, Ansible, NGINX, Memcached

Selected Projects

Real time raytracer: Implemented BVH on CUDA to achieve a 760X speedup. Implemented threadsafe worker queues to handle disproportionate workload and allow infinite ray bounces.

Community Work Portal – Developed and deployed a portal which has been handling a mandatory course's workflow for 100+ students/year since 2014.

Geometric constraint solver in C++/Qt – This could convert scribbles to neat sketches. The recognition algorithms were rudimentary, yet the heuristic driven approach could handle line segments, circles and different intersections of these primitives (endpoint, center, tangent, parallel line and equal length snapping).