Hrishikesh Bhattacharya

CONTACT INFORMATION
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EDUCATION

Ph.D. in Computer Science, The University of Texas at Austin, 2012.
> Dissertation: "On the Modular Verification and Design of Firewalls,"
> Advisor: M. G. Gouda.

EMPLOYMENT

Assistant Professor of Computing Security, Rochester Inst. Of Technology, 2016 –

Assistant Professor of Computer Science, IIIT Delhi, 2012 – 2016.

SELECTED PUBLICATIONS

DeeP4R: Deep Packet Inspection in P4 using Packet Recirculation.
> S. Gupta, D. Gosain, M. Kwon, H. B. Acharya.
> IEEE Conf. on Computer Communications (INFOCOM), 2023.

Predictable Internet Clients and In-Switch Deep Packet Inspection.
> S. Gupta, D. Gosain, M. Kwon, H. B. Acharya.
> International Conference on Computer Communication (ICCCN), 2023.

Telemetron: Measuring Network Capacity Between Off-Path Remote Hosts.
> D. Gosain, A. Jaiswal, H. B. Acharya, S. Chakravarty.
> IEEE Conference on Local Computer Networks (LCN), 2021.

Simple Deep Packet Inspection with P4. (Demo)
> S. Gupta, D. Gosain, G. Grigoryan, M. Kwon, H. B. Acharya.
> IEEE International Conference on Network Protocols (ICNP), 2021.

Maginot Lines and Tourniquets: On the Defendability of National Cyberspace.
> D. Gosain, M. Rawat, P. Sharma, H. B. Acharya.
> IEEE Conference on Local Computer Networks (LCN), 2020.

SiegeBreaker: An SDN Based Practical Decoy Routing System.
(Journal Paper).

>P. Sharma, D. Gosain, H. Sagar, C. Kumar, A. Dogra,
>V. Naik, H. B. Acharya, S. Chakravarty.
>(Proceedings on) Privacy Enhancing Technologies (PETS), 2020.

OTHER PUBLICATIONS

Loop Avoidance in Computer Networks. (Demo)
>P. Willis, N. Shenoy, H. B. Acharya.
>IEEE Conf. on Computer Communications-Workshops (INFOCOM-WK), 2020.

Detecting BGP Route Anomalies with Deep Learning.
>K. McGlynn, H. B. Acharya, M. Kwon.
>IEEE Conf. on Computer Communications-Workshops (INFOCOM-WK), 2019.

The World from Kabul: Internet Censorship in Afghanistan.
>H. B. Acharya, A. Ramesh, A. Jalaly.
>IEEE Conf. on Computer Communications-Workshops (INFOCOM-WK), 2019.

On Securing Healthcare with Software-Defined Networks.
>S. Gupta, H. B. Acharya, M. Kwon.
>IEEE Conf. on Computer Communications-Workshops (INFOCOM-WK), 2019.

Policy Expressions and the Bottom-Up Design of Computing Policies.
(Journal paper).

>R. Reaz, H. B. Acharya, E. S. Elmallah, J. A. Cobb, and M. G. Gouda.
>-   *Computing*, 2019.
>-   International Conference on Networked Systems (NETYS), 2017.

Parallel Processing of Packets with a PRAM.
>H. B. Acharya.
>International Conf. on Distributed Computing and Networking (ICDCN), 2018.

The Devil's in The Details: Placing Decoy Routers in the Internet.
>D. Gosain, A. Aggarwal, S. Chakravarty, and H. B. Acharya.
>Annual Computer Security Applications Conference (ACSAC), 2017.

Few Throats to Choke: On the Current Structure of the Internet.
  H. B. Acharya, Sambuddho Chakravarty, and Devashish Gosain.
  IEEE Conference on Local Computer Networks (LCN), 2017.

Mending Wall: On the Implementation of Censorship in India.
(Best Student Paper).
  D. Gosain, A. Aggarwal, S. Shekhawat, H. B. Acharya and S. Chakravarty.
  EAI Intl. Conf. on Security & Privacy in Comm. Networks (SECURECOMM), 2017.

Analysis of Computing Policies using SAT solvers (short paper),
  Marijn JH Heule, Rezwana Reaz, H. B. Acharya, and Mohamed G Gouda.
  Intl. Symp. on Stabilization Safety and Security of Distributed Systems (SSS) 2017.

Rules in Play: On the Complexity of Routing Tables and Firewalls,
  H. B. Acharya, S. Kumar, M. Wadhwa and A. Shah,
  IEEE International Conference on Network Protocols (ICNP), 2016.

Towards a Practical Infrastructure for Decoy Routing,
  S. Chakravarty, V. Naik, H. B. Acharya and C. S. Tanwar,
  Network and Distributed System Security – Workshops (NDSS-WK), 2015.

Troubleshooting SDN Control Software with Minimal Causal Sequences,
(Journal paper).
  C. Scott, A. Wundsam, A. Panda, B. Raghavan, A. Or, J. Lai,
  E. Huang, Z. Liu, A. El-Hassany, S. Whitlock, H. B. Acharya,
  K. Zarifis and S. Shenker,
  - ACM Special Interest Group on Data Comm. (SIGCOMM), 2014.
  - Computer Communications Review 44(4), 395—406, 2015.

Rule Width and the Unreasonable Effectiveness of Policy Verification,
  H. B. Acharya,
  IEEE Conference on Local Computer Networks (LCN), 2014.

Incremental Verification of Computing Policies,
  E. Elmallah, H. B. Acharya and M. Gouda,
  Intl. Symp. on Stabilization Safety and Security of Distributed Systems (SSS) 2014.

POPE and PaNeL: Fast Lookup in Routing Tables,
>H. B. Acharya,
>IEEE Global Internet Symposium (GI), 2014.

The Best Keying Protocol for Sensor Networks
(Journal paper).
>Taehwan Choi, H. B. Acharya and Mohamed G. Gouda,
>*Pervasive and Mobile Computing*, 2013.

Firewall Verification and Redundancy Checking are Equivalent,
>H. B. Acharya and M. G. Gouda,
>IEEE International Conference on Computer Networks (INFOCOM), 2011.

TPP: The Two-Way Password Protocol,
>Taehwan Choi, H. B. Acharya and M. G. Gouda,
>International Conference on Computer Communication (ICCCN), 2011.

On the Hardness of Topology Inference,
>H. B. Acharya and Mohamed G. Gouda,
>International Conf. on Distributed Computing and Networking (ICDCN), 2011.

Is That You?: Authentication in a Network without Identities,
(Journal paper).
>Taehwan Choi, H. B. Acharya and Mohamed G. Gouda,
>- IEEE Global Communications Conference (GLOBECOM), 2011.
>- *International Journal of Security and Networks*, 2011.

The K-Observer Problem in Computer Networks,
>H. B. Acharya, Taehwan Choi, Rida A. Bazzi and M. G. Gouda,
>Intl. Symp. on Stabilization Safety and Security of Distributed Systems (SSS),2011.

Firewall Modules and Modular Firewalls,
>H. B. Acharya, Aditya Joshi and M. G. Gouda,
>IEEE International Conference on Network Protocols (ICNP), 2010.

Projection and Division: Linear-Space Verification of Firewalls,
>H. B. Acharya and Mohamed G. Gouda,
>IEEE International Conference on Distributed Computing Systems
>(ICDCS), 2010.

The Weak Network Tracing Problem,

        H. B. Acharya and Mohamed G. Gouda,

        Intl. Conf. on Distributed Computing and Networking (ICDCN), 2010.

On the Power of Non-Spoofing Adversaries,

        H. B. Acharya and Mohamed G. Gouda,

        International Symposium on Distributed Computing (DISC), 2010.

A Theory of Network Tracing,

        H. B. Acharya and Mohamed G. Gouda,

        Intl. Symp. on Stabilization Safety and Security of Distributed Systems (SSS) 2009.

Linear-Time Verification of Firewalls,

        H. B. Acharya and Mohamed G. Gouda,

        IEEE International Conference on Network Protocols (ICNP), 2009.

Nash Equilibria in Stabilizing Systems,
(Journal paper).

        M. G. Gouda and H. B. Acharya,

-   *Theoretical Computer Science*, 2011.
-   Intl. Symp. on Stabilization Safety and Security of Distributed Systems
    (SSS) 2009.

Delay Tolerant Networks: A Retrospective,

        H. B. Acharya, H. N. Shah and V. Venkataraman,

        IEEE International Conference on Next-Generation Mobile Applications, Services,
and Technologies (NGMAST), 2009.

Semi-Reviewed (Invited Talks, Presentations).

Keeping The Commons.
(Panel Talk).

        H. B. Acharya.

        International Conf. on Computer Communications and Networks (ICCCN), 2020.

From Spanning Trees to Meshed Trees.
(Invited Paper).

H. B. Acharya, J. Hamilton, N. Shenoy.

International Conf. on Communication Systems & Networks (COMSNETS), 2020.

Censors Doing Little Against COVID Misinformation.

H. B. Acharya.

NSF Pandemic Research for Preparedness & Resilience (PREPARE), 2020.

Held Hostage? Mapping the influence of major providers and CDNs on the Internet.

H. B. Acharya, S. Chakravarty.

CAIDA Workshop on Active Internet Measurement (AIMS), 2018.

Maginot Lines and Tourniquets.

H. B. Acharya.

Great Lakes Security Day (GLSD), 2020.

GRANT FUNDING

NSF RAPID: World Wide Access to COVID-19 Information. 2020. ($150 k)

(Internal).
GWBC (Grant Writers Boot Camp), 2018. ($ 5 k)
GCCIS Seed Funding, 2018 and 2021. ($ 10 k each)

TEACHING

Courses Developed at RIT.
1. Internet Security (Graduate Seminar). – 2022-23.
2. Network Security and Forensics. – 2018-2023. (created online course, 2020.)
3. Authentication and Security Models. – 2017.
4. Research Methods/Proposal Development. – 2016-17.

Other Courses.
5. Distributed Systems. – 2012-2015.
6. Network Security. – 2013-2016.
7. Introduction to Programming. – 2013-2015.

Workshops and Outreach.

1. Course on Network Security, INICTEL, Peru – 2014.
2. Workshop on Security Policies, DRDO, India – 2014.

SERVICE

Reviewer.
1. Distributed Computing.
2. Pervasive and Mobile Computing.
3. Computer Networks.
4. Computer Communications.
5. Future Internet.
6. ACM Computing Surveys.
7. Transactions on Networking.
8. Transactions on Network and Service Management.
9. Transactions on Information Forensics and Security.
10. Journal on Selected Areas in Communications.
11. International Journal of Sensor Networks.
12. International Journal of Distributed Sensor Networks.

Session Chair (Conference).
1. IEEE International Conference on Network Protocols (ICNP) 2014.
2. IEEE International Geoscience and Remote Sensing Symposium (IGARSS) 2008.

Program Committee.
1. International Conference on Computer and Communication Systems. (ICCCS) 2021.
2. IEEE/ACM Intl. Symposium on Cluster, Cloud and Internet Computing. (CCGrid) 2020.
3. Singapore Cyber Security R&D Conference 2016.
4. IEEE Symposium on Signal Processing and Information Tech. (ISSPIT) 2016.

Editorial Board (Journal).
1. International Journal of Informatics and Communication Technology. 2020.