Deeraj Nagothu, Ph.D.

Research Scientist, Intelligent Fusion Technology

✉ deeraj.nagothu@intfusiontech.com   📱 (607)-761-3956

🌐 https://deerajnagothu.com   ⭘ https://github.com/deerajnagothu

Ⓖ https://scholar.google.com/citations?user=xBeaGnMAAAAJ&hl

Research Interests

◇ Digital Multimedia Authentication, Deep Learning, Information Assurance, Network and Web Security.

◇ Network Infrastructure Virtualization and Software Defined Networking.

◇ Artificial General Intelligence Alignment and Safety Research.

Education

2017 – 2023	◇ **Ph.D, Electrical and Computer Engineering**, Binghamton University-SUNY, Binghamton, NY, USA. Dissertation title: *Lightweight Multimedia Authentication at the Edge using Environmental Fingerprint* Advisor: Dr. Yu Chen
2015 – 2016	◇ **MS, Electrical and Computer Engineering**, Binghamton University-SUNY, Binghamton, NY, USA. Thesis title: *iCrawl: A high interaction client honeypot system.* Advisor: Dr. Andrey Dolgikh
2011 – 2015	◇ **B.Tech, Electronics and Communications Engineering**, SASTRA University, Tamil Nadu, India.

Research Experience

2023 – Present	◇ **Research Scientist.** Intelligent Fusion Technology Inc. (IFT), Germantown, MD, USA.
2018 – 2023	◇ **Graduate Research Assistant** SUNY Research Foundation, Binghamton University, Binghamton, NY, USA.

Teaching Experience

Graduate Instructor	◇ **Network Computer Security (EECE-480F),** Spring 2016 - Spring 2020.
Teaching Assistant	◇ **Cyber Physical Systems (EECE-480A),** Fall 2016 - Spring 2017.
	◇ **Cryptography and Information Security (EECE-405/560),** Fall 2020.
	◇ **Linear Algebra and Engg Programming (EECE-212),** Spring 2021.

Skills

Coding	◇ Python, C/C++, C♯, Shell, Bash, MATLAB, Powershell, SQL, LaTeX, Neo4j and Cypher.
Network Security	◇ DHCP, SSH, VPN, DNS, Port-Forwarding, DMZ N/W, NMAP scan, Pentesting using Metasploit framework, OpenDaylight for SDN, LibreNMS and Cacti Server.
Virtualization	◇ ESXi, Vyos, Cisco Nexus, HyperV, Xen, OpenStack, OpenMano, Docker, Proxmox.
Web Dev	◇ Html, CSS, JavaScript, Flask Web Server, React and Jekyll
Languages	◇ Strong reading, writing and speaking competencies for English, Hindi, Telugu, Tamil.
Misc.	◇ Academic Research Mentor, Teaching, Professional Training, and Consultation.

Research Publications

Journal Articles

1   **Nagothu, D.**, Xu, R., Chen, Y., Blasch, E., & Aved, A. (2022a). Defakepro: Decentralized deepfake attacks detection using enf authentication. *IT Professional*, *24*(5), 46–52. 🔗 doi:10.1109/MITP.2022.3172653

2   **Nagothu, D.**, Xu, R., Chen, Y., Blasch, E., & Aved, A. (2022b). Deterring deepfake attacks with an electrical network frequency fingerprints approach. *Future Internet*, *14*(5), 125.
🔗 doi:10.3390/fi14050125

3   Xu, R., **Nagothu, D.**, & Chen, Y. (2021a). Decentralized video input authentication as an edge service for smart cities. *IEEE Consumer Electronics Magazine*, *10*(6), 76–82. 🔗 doi:10.1109/MCE.2021.3062564

4   Xu, R., **Nagothu, D.**, & Chen, Y. (2021b). Econledger: A proof-of-enf consensus based lightweight distributed ledger for iovt networks. *Future Internet*, *13*(10), 248. 🔗 doi:10.3390/fi13100248

5   **Nagothu, D.**, Chen, Y., Aved, A., & Blasch, E. (2021). Authenticating video feeds using electric network frequency estimation at the edge. *EAI Endorsed Transactions on Security and Safety*, *"7"*(24).
🔗 doi:10.4108/eai.4-2-2021.168648

6   Xu, R., Nikouei, S. Y., **Nagothu, D.**, Fitwi, A., & Chen, Y. (2020). Blendsps: A blockchain-enabled decentralized smart public safety system. *Smart Cities*, *3*(3), 928–951.
🔗 doi:10.3390/smartcities3030047

7   **Nagothu, D.**, Chen, Y., Blasch, E., Aved, A., & Zhu, S. (2019). Detecting malicious false frame injection attacks on surveillance systems at the edge using electrical network frequency signals. *Sensors (Basel).*, *19*(11), 1–19. 🔗 doi:10.3390/s19112424

Conference Proceedings

1   **Nagothu, D.**, Xu, R., & Chen, Y. (2023). DEMA: Decentralized electrical network frequency map for social media authentication. In *Disruptive Technologies in Information Sciences VII* (Vol. 12542, pp. 57–72).
🔗 doi:10.1117/12.2663303

2   Poredi, N., Nagothu, D., & Chen, Y. (2023). AUSOME: Authenticating social media images using frequency analysis. In *Disruptive Technologies in Information Sciences VII* (Vol. 12542, pp. 44–56).
🔗 doi:10.1117/12.2663296

3   Poredi, N., **Nagothu, D.**, Chen, Y., Li, X., Aved, A., Ardiles-Cruz, E., & Blasch, E. (2022). Robustness of electrical network frequency signals as a fingerprint for digital media authentication. In *2022 ieee 24th international workshop on multimedia signal processing (mmsp)* (pp. 1–6).
🔗 doi:10.1109/MMSP55362.2022.9949315

4   **Nagothu, D.**, Dimock, D., Kulesza, A., Yang, H., & Chen, Y. (2022). A distributed crawler for iovt-based public safety surveillance exploring the spatio-temporal correlation. In *Sensors and systems for space applications xv* (Vol. 12121, pp. 18–28). 🔗 doi:10.1117/12.2618909

5   **Nagothu, D.**, Xu, R., Chen, Y., Blasch, E., & Aved, A. (2021a). Detecting compromised edge smart cameras using lightweight environmental fingerprint consensus. In *Proceedings of the 19th acm conference on embedded networked sensor systems* (pp. 505–510). 🔗 doi:10.1145/3485730.3493684

6   **Nagothu, D.**, Xu, R., Chen, Y., Blasch, E., & Aved, A. (2021b). Defake: Decentralized enf-consensus based deepfake detection in video conferencing. In *Ieee 23rd international workshop on multimedia signal processing*. 🔗 doi:10.1109/MMSP53017.2021.9733503

7   Quan, W., **Nagothu, D.**, Poredi, N., & Chen, Y. (2021). Cripi: An efficient critical pixels identification algorithm for fast one-pixel attacks. In *Sensors and systems for space applications xiv* (Vol. 11755, pp. 83–99). 🔗 doi:10.1117/12.2581377

8   Rosenberg, M., Burns, J. H., **Nagothu**, **D.**, & Chen, Y. (2020). Enabling continuous operations for uavs with an autonomous service network infrastructure. In *Sensors and systems for space applications xiii* (Vol. 11422, pp. 165–179). 🔗 doi:`10.1117/12.2565866`

9   Fitwi, A. H., **Nagothu**, **D.**, Chen, Y., & Blasch, E. (2019). A distributed agent-based framework for a constellation of drones in a military operation. In *Proc. - winter simul. conf.* (Vol. 2019-Decem). 🔗 doi:`10.1109/WSC40007.2019.9004907`

10   **Nagothu**, **D.**, Schwell, J., Chen, Y., Blasch, E., & Zhu, S. (2019). A study on smart online frame forging attacks against video surveillance system. In *Proc. spie - int. soc. opt. eng.* (Vol. 11017). 🔗 doi:`10.1117/12.2519005`

11   **Nagothu**, **D.**, Xu, R., Nikouei, S. Y., & Chen, Y. (2019). A microservice-enabled architecture for smart surveillance using blockchain technology. In *2018 ieee int. smart cities conf. isc2 2018.* 🔗 doi:`10.1109/ISC2.2018.8656968`

12   Nikouei, S. Y., Xu, R., **Nagothu**, **D.**, Chen, Y., Aved, A., & Blasch, E. (2019). Real-time index authentication for event-oriented surveillance video query using blockchain. In *2018 ieee int. smart cities conf. isc2 2018.* 🔗 doi:`10.1109/ISC2.2018.8656668`

Book Chapters

1   Xu, R., **Nagothu**, **D.**, & Chen, Y. (2023). Ecom: Epoch randomness-based consensus committee configuration for iot blockchains. In K. Daimi, I. Dionysiou, & N. El Madhoun (Eds.), *Principles and practice of blockchains* (pp. 135–154). 🔗 doi:`10.1007/978-3-031-10507-4_7`

2   **Nagothu**, **D.**, Poredi, N., & Chen, Y. (2022). Evolution of attacks on intelligent surveillance systems and effective detection techniques. 🔗 doi:`10.5772/intechopen.105958`

3   **Nagothu**, **D.**, Xu, R., Nikouei, S. Y., Zhao, X., & Chen, Y. (2020). Smart surveillance for public safety enabled by edge computing. (pp. 409–433). 🔗 doi:`10.1049/PBPC033E_ch19`

Books

1   **Nagothu**, **D.**, & Chen, Y. (2023). *Authentication of video feeds in smart edge surveillance networks* (C. Olson, Ed.). Bellingham, Washington 98227-0010: SPIE Press.

Dissertation and Thesis

1   **Nagothu**, **D.** (2023). *Lightweight Multimedia Authentication at the Edge Using Environmental Fingerprint* (Ph.D. State University of New York at Binghamton, United States – New York). ISBN: 9798380566988. Retrieved October 28, 2023, from 🔗 `https://www.proquest.com/docview/2872097834/abstract/A49AAD7CD800446BPQ/1`

2   **Nagothu**, **D.** (2016). *Icrawl: A high interaction client honeypot system* (M.S. State University of New York at Binghamton, United States – New York).

Professional Activities

Reviewer for Journals

◇ IEEE Transactions on Pattern Analysis and Machine Intelligence
◇ IEEE Transactions on Dependable and Services Computing
◇ IEEE Transactions on Services Computing
◇ SPIE Journal of Electronic Imaging (JEI).
◇ Elsevier Computers and Security

Professional Activities (continued)

- ◇ Expert Systems with Applications
- ◇ IEEE Access
- ◇ IEEE Transactions on Aerospace and Electronic Systems

Reviewer for Conferences

- ◇ IEEE International Conference on Computer Communications (INFOCOM).
- ◇ IEEE Global Communications Conference (GLOBECOM) IoT and Sensor Networks (IoTSN).
- ◇ IEEE Global Communications Conference (GLOBECOM) Communication and Information Systems Security (CISS).
- ◇ IEEE Global Communications Conference (GLOBECOM) Communications Software, Services and Multimedia Apps (CSSMA).
- ◇ IEEE International Conference on Wireless and Mobile Computing, Networking And Communications (WiMob).
- ◇ ACM International Workshop on Blockchain-enabled Networked Sensor Systems (BlockSys)
- ◇ IEEE International Smart Cities Conference (ISC2).
- ◇ IEEE International Conference on Cloud Networking (CloudNet)
- ◇ IEEE International Conference on Communications (ICC)

Miscellaneous Experience

Awards and Achievements

2020	◇ **GSEA**, Graduate Student Award for Excellence in Teaching.

Academic Mentor

2022-2023	◇ **ECE Capstone Design Project (ECD 323)**. "Real-Time Visual-Layer Attacks Detection using Electrical Network Frequency Signals".
2019-2020	◇ **Master's Thesis** "Critical Pixels Attack on DNN"
	◇ **Master's Thesis** "Human Identification Using Skeleton Joints Based on 2D Image"
2019-2021	◇ **ECE Capstone Design Project (ECD 122 - WCP 29)**. "Exploring the Spatio-Temporal Correlation in IoVT Network for Smart Public Safety".
2018-2019	◇ **ECE Capstone Design Project (WCP40)**. "Service Network for Drones".

Memberships

- ◇ **IEEE**.
- ◇ **ACM**.
- ◇ **SPIE**.