

MEHRAB HOSAIN

Security & Digital Forensics • Cloud & Media Infrastructure • AI/ML & Signal Processing • Electrical Engineering

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Work authorization: F-1 student, eligible for CPT for Summer 2027 internships (no employer sponsorship needed for the internship)

SUMMARY

Security-focused engineer with 10 years of hands-on experience building, securing and running high-traffic news, broadcast and live-streaming platforms, cloud/CDN infrastructure and servers, most recently leading digital operations and IT at one of Bangladesh's largest TV networks. Now a fully funded Ph.D. student in Cyberspace Engineering in Louisiana Tech's Digital Forensics & Cyber Lab (M.S. Electrical Engineering, 4.00 GPA), holder of the ISACA Cybersecurity Fundamentals Certificate, with publications in security, digital forensics, machine learning and signal processing. President of the College of Engineering & Science Graduate Student Council. Seeking a Summer 2027 internship in security engineering, digital forensics, data center or cloud infrastructure, AI/ML and signal processing, media and streaming technology, or power and electrical systems.

EDUCATION

Louisiana Tech University , Ruston, LA <i>Ph.D., Cyberspace Engineering — GPA 3.87/4.00 — fully funded Graduate Research Assistant</i> • Research focus: Applied cryptography and security in distributed systems (advisor: Prof. Manki Min); machine learning, signal processing, digital forensics and biometrics.	Expected Aug 2028
Louisiana Tech University , Ruston, LA <i>M.S., Electrical Engineering — GPA 4.00/4.00 — earned during the Ph.D.; all requirements completed</i>	Conferral pending
Delhi Technological University , Delhi, India <i>M.Tech., Signal Processing and Digital Design — GPA 3.50/4.00 (WES scale) — full ICCR scholarship</i>	Jun 2023
University of Information Technology & Sciences (UITS) , Dhaka <i>M.Eng., Computer Science and Engineering — GPA 3.64/4.00 (WES scale)</i>	Aug 2022
Bangladesh University of Business & Technology (BUBT) , Dhaka <i>B.Sc., Electrical and Electronic Engineering — GPA 3.69/4.00 (WES scale)</i>	Sep 2016

TECHNICAL SKILLS

Security & Digital Forensics: Digital forensics and evidence integrity, steganography and steganalysis, content authenticity and manipulated-media verification, web application hardening, CDN/WAF defenses, DRM and piracy enforcement, fake-traffic and monetization-integrity analysis, biometric authentication; post-quantum signatures (ML-DSA, Falcon), Ed25519/ECDSA

Cloud & Infrastructure: Linux server administration, Cloudflare (CDN, WAF, DNS, Workers), caching and performance tuning for high-traffic sites, Redis, uptime and incident handling, Git/GitHub, staged deployments with rollback

Media, Streaming & Web: Live digital broadcasting and online streaming, YouTube CMS, Facebook Rights Manager, Google Ad Manager, content-ID and piracy enforcement; Next.js, React, TypeScript, React Native (Expo), Node.js, REST APIs, WordPress (custom PHP plugins), MySQL/SQLite, large-scale CMS migration

AI/ML & Signal Processing: Deep neural networks, SVMs, wavelet (EWT) and cepstral features, speech and emotion recognition, ECG biometrics, image processing, object detection; AI coding agents (Claude Code, Codex) and MCP integrations

Electrical & Power: Power systems and protection, power electronics, energy conversion, control system design, embedded systems, digital design and verification, DSP, digital and telecommunication systems

Languages & Tools: Python, TypeScript/JavaScript, PHP, SQL, C, MATLAB, Bash/PowerShell; Jupyter/Colab, Linux

PROFESSIONAL EXPERIENCE

Digital Operations & Systems Engineer , Channel i (Impress Telefilm Ltd.), Dhaka, Bangladesh • Led the digital operations and IT team at one of Bangladesh's largest satellite TV networks, owning web infrastructure, servers, online broadcast delivery and digital publishing. • Designed, built and secured the national news portal and newsroom systems, keeping them online through breaking-news traffic peaks with CDN caching, server tuning and security controls. • Ran live online broadcasting on YouTube and Facebook and grew the network's digital audience from 2017; managed copyright protection (YouTube CMS, Facebook Rights Manager) and digital revenue (Google Ad Manager). • Supported news-content authenticity and verification workflows against manipulated and misattributed media.	Feb 2017 – Aug 2024
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Independent IT Consultant (Upwork: Top Rated, 100% Job Success)**Feb 2014 – Aug 2024**

- Delivered 100+ web, e-commerce and e-learning projects for 50+ clients in 15 countries, including platforms for government officials, Hydrofoil Academy, JaimePOS and Beverlyhill Roses; long-term IT consultant to SRK Studios (2018–2024) and The Business Standard (2024).
- Built high-traffic sites with CDN strategies for fast response under heavy load, and managed digital advertising campaigns with a combined budget above \$1.2M.

Technical Support Engineer (Remote), Acterys, Australia**Jan 2020 – Jun 2021**

- Led website platform development for a finance and business-analytics software company, covering performance, SEO and brand alignment.

Adjunct Faculty, Tagore University of Creative Arts, Dhaka**Nov 2023 – Aug 2024****RESEARCH EXPERIENCE**

Graduate Research Assistant, Digital Forensics & Cyber Lab, Louisiana Tech University**Sep 2024 – Present**

- Measure what post-quantum (PQ) cryptography costs real distributed systems: compute, network bandwidth and storage overhead of NIST signature schemes inside multi-node consensus networks.
- Built a Python benchmarking pipeline (9,000 timing samples across Ed25519, ML-DSA and Falcon) and ran 4- to 32-node CometBFT test networks under load; showed a 100-signer commit grows from 6.4 KB to 242 KB with ML-DSA-44 (~38x).
- Benchmarked storage-proof systems (Chia, Filecoin) and simulated propagation across a 300-node network; keep every result reproducible with SHA-256 manifests and automated verifiers (757 results re-checked, all pass).
- Co-authoring work on ECG-based biometric authentication; developing a proposal on video-traffic integrity (detecting coordinated fake viewing on streaming platforms).

Research and Teaching Assistant, Delhi Technological University, India**Jul 2021 – Jun 2023**

- Signal-processing and computer-vision research under Prof. Rajiv Kapoor: image steganography with pseudorandom pixel selection, object detection for rail-track safety, and speech emotion recognition (wavelet features + cubic SVM, 99.2% accuracy on the 7-class TESS dataset).

PUBLICATIONS

27 citations, h-index 3 (24 on Google Scholar + 3 indexed only on ResearchGate) | scholar.google.com/citations?user=M7GPfZAAAAAJ

- **M. Hosain**, M. Ogbe, M. Min, "Toward Post-Quantum Safe Blockchains: Comparison of Consensus Families," IEEE Int. Conf. on Computing, Networking and Communications (ICNC), pp. 781–785, 2026.
- M. Ogbe, **M. Hosain**, M. Min, "ECG-Based Biometric Authentication: A Comprehensive Survey of Methods, Challenges, and Future Directions," IEEE 23rd Consumer Communications & Networking Conf. (CCNC), 2026.
- **M. Hosain**, S. A. Shuvo, M. Ogbe, M. S. J. Mazumder, Y. Rahman, M. A. Hakim, A. Pandey, "Web Technologies Security in the AI Era: A Survey of CDN-Enhanced Defenses," IEEE APWiMob, pp. 180–186, 2025.
- **M. Hosain**, R. Kapoor, "A Novel APVD Steganography Technique Incorporating Pseudorandom Pixel Selection for Robust Image Security," Int. Conf. on Artificial-Business Analytics, Quantum and Machine Learning, Springer, pp. 663–677, 2023. (11 citations)
- **M. Hosain**, R. Kapoor, "Detection of Rail Line Track and Human Beings near the Track to Avoid Accidents," Int. Conf. on Artificial-Business Analytics, Quantum and Machine Learning, Springer, pp. 763–779, 2023.
- **M. Hosain**, A. Pandey, S. Taran, Ravi, A. Hafeez, Nikhil, "Speech Emotion Recognition Using Empirical Wavelet Transform and Cubic Support Vector Machine," in Artificial Intelligence: A Tool for Effective Diagnostics, IOP Publishing, ch. 13, 2024. doi:10.1088/978-0-7503-5964-1ch13 (3 citations, ResearchGate)
- **M. Hosain**, M. Arafat, G. Z. Islam, J. Uddin, M. M. Hossain, F. Alam, "Emotional Expression Detection in Spoken Language Employing Machine Learning Algorithms," arXiv:2304.11040, 2023.
- D. Bhadra, **M. Hosain**, F. Alam, "Deep Feed-Forward Neural Network for Bangla Isolated Speech Recognition," Journal of Nazrul University, 10(1–2), pp. 85–96, 2025; earlier version at ICTBJ 2023.

LEADERSHIP, HONORS & CERTIFICATIONS

Leadership: President (2026–2027) and Vice President (2025–2026), Graduate Student Council, College of Engineering & Science, Louisiana Tech University

Honors: Fully funded Ph.D. assistantship, Louisiana Tech; ICCR full scholarship (Government of India); Employee of the Year, Channel i (2018)

Certifications: ISACA Cybersecurity Fundamentals Certificate (Aug 2026); ISACA IT Risk Fundamentals Certificate (exam pending); Future AWS AI Programmer Nanodegree; Introduction to Programming Using Python; Full Stack Web Development; Advanced Search Engine Optimization

Languages: English (full professional), Bangla (native), Hindi (elementary)