VAIBHAV KRISHNA

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PERSONAL PROFILE

Innovative Machine Learning and Cybersecurity researcher and current M.Tech scholar at NIT Jalandhar with proven expertise in AI-driven solutions, platform security, and incident management. Co-Founder of Classwork Squad, empowering 1,000+ students globally with personalized learning. Experienced at BloggUp as an ML Engineer, Cybersecurity Engineer, and Incident Manager, driving advancements in recommendation systems, vulnerability management, and DDoS recovery. Skilled in Python, C/C++, data analysis, and deep learning, with research spanning AI-powered agriculture, speech emotion recognition, and cybersecurity tools. Known for adaptability, problem-solving, and delivering impactful, real-world solutions.

EDUCATION

Incoming Exchange Student [PDF]   *Feb 2026 – Jul 2026*
École Centrale de Lille, Villeneuve-d'Ascq, France
Focus: Cybersecurity, Machine Learning, Cryptography

M.Tech in Information Security   *Aug 2024 – Jul 2026*
Dr. B.R. Ambedkar National Institute of Technology (NIT), Jalandhar
Focus: Cybersecurity, Machine Learning, Information Systems

B.Tech in Computer Science   *Aug 2019 – Jul 2023*
SRM University, Sonepat, Haryana | GPA: 8.33
Focus: Data Structures, Algorithms, Cybersecurity

RESEARCH PROJECT

AI-Powered Crop Disease Detection and Management System | IndiaAI   *Aug 2024 – Present*
(Govt. of India)
- Developed DenseNet-121/ResNet-50 models for early disease detection from crop images.
- Integrated IoT & satellite data for soil/environment monitoring.
- Designed a digital marketplace for crop pricing and smart recommendations.

EmailHarvester: Google Dork Email Extractor | Towards Cybersecurity   *Sep 2024 – Present*
- Built a Python tool for automated email extraction via Google dorks.
- Added multi-threading, CAPTCHA handling, proxy support, SSL bypass.

Microsoft Imagine Cup Project | Cross-Platform Unified Operating System   *May 2024 – July 2024*
- Built a cross-platform experimental OS capable of running Windows (.exe via Wine), macOS (simulators), and native Linux applications seamlessly.

Smart India Hackathon Finalist | Govt. of India   *Aug 2022*
- Developed ML-based content monitoring solution to detect threats to national integrity.

Language Independent Speech Emotion Recognition | SRM University   *Jul 2022 – Dec 2022*
- Built SER system using MFCCs for feature extraction and deep learning models for classification.

Caller ID Spoofing (Self-Initiated) | *Delhi, India*   *Jan 2021 – Mar 2021*
- Demonstrated telecom protocol vulnerabilities using Asterisk server for caller ID manipulation.

Inventory Management System | SRM University   *Jul 2020 – Sep 2020*
- Designed secure, modular inventory management software with multi-level access.

RESEARCH EXPERIENCE

Research Scholar, IndiaAI (Govt. of India) [PDF]   *Jan 2025 – Present*

Graduate Researcher, Advisor: Dr Shveta Mahajan

- Developed DenseNet-121/ResNet-50 models for early disease detection from crop images.
- Integrated IoT & satellite data for soil/environment monitoring.
- Designed a digital marketplace for crop pricing and smart recommendations.

Cryptography Lab, NIT, Jalandhar   *Feb 2025 – June 2025*

Graduate Researcher, Advisor: Dr Harsh K Verma

- Worked on foundational concepts in **symmetric-key and public-key cryptography**, including AES, SHA-2, key derivation, and authenticated encryption schemes.
- Conducted small-scale research experiments on secure protocol design, focusing on message confidentiality, integrity, and replay-attack resistance.

CIIE Lab, SRM University, Sonepat   *Sep 2019 – Sep 2022*

Undergraduate Researcher, Advisor: Dr. Mahamad Ahamad Mohiddon

- Designed and executed hands-on experiments in **Arduino-based embedded systems**, including sensor integration, microcontroller programming, and real-time data acquisition.
- Worked on **IoT prototyping**, developing early-stage models for smart automation using Wi-Fi/Bluetooth modules, cloud dashboards, and device-to-device communication.

PUBLICATIONS

- Ahmad, S. K., Khan, S., **Krishna, V.**, Verma, P. K., & Singh, N. P. (2025). *Improving bipedal robot stability through deep learning: A TensorFlow model for servo angle prediction.* Accepted at **Proceedings of International Conference on Data Science and Artificial Intelligence.** – (Accepted) DOI: 10.1007/978-981-96-9083-1_22 [PDF]
- **Krishna, V.**, & Singh, N. P. (2025). *Scalable analog acoustic co-processors: A novel paradigm for scientific computing beyond CMOS limits.* Submitted to **Silicon (Springer Nature Journal)** – (Under review with minor revision decision). [PDF]
- **Krishna, V.**, & Singh, N. P. (2025). *Wave-based analog computation: A programmable and error-resilient acoustic framework.* Submitted to **Royal Society Open Science (Royal Society, London)** – Under Peer Review. [PDF]
- **Krishna, V.**, & Jaiswal, A. K. (2025). Integrating human feedback in caller ID spoofing defenses: A hybrid approach for real-time VoIP security and adversarial robustness. Submitted to **Computer Networks (Elsevier)** – (Under Review). [PDF]
- **Krishna, V.**, Jaiswal, A. K. & Mahajan, S. (2025)**.** Beyond accuracy: A mechanistic and ecological failure analysis of zero-shot large multimodal models for fine-grained crop disease diagnosis. Submitted to **Computers and Electronics in Agriculture (Elsevier)** – *(Under review).* [PDF]
- Jaiswal, A. K., & **Krishna, V.** (2025). Ratchet-TBC: Self-healing tweakable block ciphers for post-compromise secure messaging. Submitted to **Journal of Cryptology** – (Submitted). [PDF]
- **Krishna, V.**, Jaiswal, A. K., & Singh, N. P. (2025). Privacy-preserving hybrid multi-domain image watermarking with fully homomorphic encryption and content-adaptive embedding under realistic attack scenarios. (Unsubmitted) [PDF]
- **Krishna, V.**, Kumar, A., & Jaiswal, A. K. (2024). Emotion-aligned cross-modal fusion for speech emotion recognition: Contrastive learning, low-rank attention, gender-invariant modelling, and zero-shot generalization. Submitted to **Computer Speech & Language (Elsevier)** – (Under review with major revision decision). [PDF]

VOLUNTEERING AND LEADERSHIP

Core Member | Center for Innovation, Incubation & Entrepreneurship (CIIE)
SRM University, Delhi NCR, Sonepat — Sep 2019 – Sep 2022 (3 years)

- Conducted **Arduino training classes**, **IoT workshops**, and hands-on sessions on **RC Car and Drone development**, engaging students from diverse academic backgrounds.
- Promoted **technical innovation, peer-to-peer learning, and entrepreneurship culture** within the university community.
- Received **Certificates of Appreciation (2019–2021, 2021–2022)** for contributions to student training and innovation initiatives. [PDF]

Member | Organizing Committee, e-STC on "AI-Driven Techniques for Computer and Electronics Engineering"
Dr. B.R. Ambedkar National Institute of Technology (NIT), Jalandhar — 9 Dec 2024 – 13 Dec 2024 (5 Days)

- Contributed to planning, coordination, and smooth execution of a five-day short-term course jointly organized by the Departments of Computer Science and Electronics Engineering, supporting speaker management, participant facilitation, and overall event operations. [PDF]

HONORS AND AWARDS

IndiaAI Fellowship Awardee — *Government of India, May 2025*

- Awarded for outstanding performance, research contributions, and consistent dedication to academic and technological advancement.
- Recognized for impactful work spanning AI, cybersecurity, and applied engineering, and for delivering research that supports national development goals.

Smart India Hackathon Finalist — *Government of India, Aug 2022*

- Selected as a national finalist among top student teams across India.
- Designed and prototyped an **ML-based content monitoring system** to detect and flag **news articles and videos threatening national integrity and sovereignty**.
- Contributed to strengthening **cyber defense and information security frameworks** through applied AI solutions.

TECHNICAL SKILLS

- **Programming & Development:** Python, C, C++, JavaScript, PHP, HTML5, CSS, Bootstrap, PyQt/PyQt5, MATLAB, SQL, MySQL
- **Machine Learning & Data Science:** Deep Neural Networks (DNN), Statistical Data Analysis, Data Science, Data Analytics, Artificial Intelligence (AI), Machine Learning, Web Scraping, Tesseract OCR
- **Cybersecurity & Systems :** Incident Management, Network Load Balancing, Vulnerability Management, Network Security, Server Administration, Linux System Administration, Kali Linux, Asterisk, FreePBX
- **Software & Tools:** PyQt5, Apache, Arduino IDE, IoT Development, Drone Building, Inventory Management Systems
- **Computer Science Fundamentals:** Data Structures & Algorithms, Theory of Computation, Compiler Design, Computer Organization & Architecture, Digital Logic, Databases
- **Languages:** English, Hindi