

P Vishnu Vardhan

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SUMMARY

Research-oriented undergraduate specializing in **image encryption and cryptography**. Built **2D, 4D, and DNA-based encryption models** for UAV communication. Achieved strong security metrics (NPCR, UACI, entropy) with real-time performance. **Best Paper Award (ICISS 2026)** for work on 4D chaotic encryption.

WORK EXPERIENCE

Research Intern

June 2024 – August 2024

SRM University AP, India

- Built a **lightweight 2D chaos-based encryption scheme** for secure UAV image communication.
- Used a **2D logistic map** to balance **security and efficient performance**.
- Applied **row-column transformations and XOR-based diffusion** to improve encryption strength.
- Measured performance using **NPCR, UACI, and entropy**, showing strong resistance to attacks.
- Co-authored the paper “*Lightweight 2D Chaos-Based Encryption Scheme for Secure Image Communication in UAV Applications*”, presented at **COMSNETS 2025**.

PROJECTS

Secure and Efficient Image Encryption for UAVs Using a 4D Chaotic System

Best Paper Award – ICISS 2026

- Designed a **4D chaotic encryption framework** for UAV communication.
- Used **bitwise permutation, S-box substitution, XOR diffusion, and chaotic XOR diffusion**.
- Implemented **SHA-256-based key generation**.
- Achieved **entropy ≈ 7.99 , NPCR $\approx 99.7\%$, UACI $\approx 32\%$** .
- Demonstrated strong resistance against statistical and differential attacks.
- Achieved real-time performance (**0.03s grayscale, 0.08s color**).

Lightweight 2D Chaos-Based Image Encryption for Secure UAV Communication

- Built a **2D chaos-based encryption scheme** for UAV image transmission.
- Used a **2D logistic map** for key generation.
- Achieved **entropy 7.97, NPCR 99.69%, UACI 32.43%**.
- Applied **row-column transformations and XOR operations**.
- Demonstrated robustness against **filtering, compression, and noise attacks**.
- Achieved **0.071s encryption time**.

A Secure Image Sharing System Using Hybrid Chaos-Based Encryption

- Built a **hybrid chaos-based image encryption system** for secure image sharing.
- Used a **Tent-Sine chaotic map** with permutation, S-box substitution, and XOR diffusion.
- Implemented **SHA-256-based key generation** and block-level hash verification.
- Enabled **tamper detection before decryption**.
- Achieved **NPCR $> 99.5\%$, entropy ≈ 8** .
- Processing time **$< 0.5s$** ; accepted at **IC-ICNS 2026**.

A Secure Image Encryption Scheme for UAV Applications Using 4D Chaotic Sequences and DNA Encoding

- Developed a 4D chaos and DNA encoding-based encryption scheme.
- Applied bitwise permutation, DNA XOR, bit rotation, and chaotic diffusion.
- Achieved entropy ≈ 7.997 , NPCR $\approx 99.6\%$, UACI 28–30%.
- Demonstrated resistance against noise, compression, and filtering attacks.
- Achieved efficient performance (0.44s grayscale, 1.3s color).
- Submitted to ICEC 2026.

PUBLICATIONS

Ravi Bhargav, Priyanka Singh, P Vishnu Vardhan
Lightweight 2D Chaos-Based Encryption Scheme for Secure Image Communication in UAV Applications.
In **Proceedings of the 17th International Conference on COMmunication Systems and NET-works (COMSNETS)**, Bengaluru, India, 06–10 January 2025. IEEE.
DOI: [10.1109/COMSNETS63942.2025.10885568](https://doi.org/10.1109/COMSNETS63942.2025.10885568)

Molika Y, Puli Venkata Sai Yashwanth, P Vishnu Vardhan, Ravi Bhargav, Priyanka Singh
A Secure Image Sharing System Using Hybrid Chaos-Based Encryption.
In **Proceedings of the 2026 International Conference on Intelligent Computing, Networks, and Security (IC-ICNS)**, 2026. IEEE.
DOI: [10.1109/IC-ICNS68863.2026.11537798](https://doi.org/10.1109/IC-ICNS68863.2026.11537798)

ACADEMIC SERVICE

- Reviewer, **IEEE International Conference on Contemporary Computing and Communications (InC4 2026)**.
- Reviewer, **IEEE Access** (2026) — Completed 5 peer reviews for research articles.

TECHNICAL SKILLS

Languages	Python, SQL
Document Preparation	LaTeX (Overleaf), Microsoft Word, Microsoft Excel
Libraries	NumPy, SciPy, OpenCV, Matplotlib, Pandas, Cryptography
Version Control	Git

ADDITIONAL INFORMATION

Languages:	English (Fluent), Telugu (Native), Tamil (Spoken), German (Learning)
Awards & Activities:	• NCC A Certificate Holder: Completed NCC training; developed leadership, discipline, and teamwork skills. • Indoor Sports Convenor, SRM University-AP: Managed the national-level university sports fest <i>UDGAM 2024</i>. • Rope Skipping Manager: Led the university team to the All India Inter-University Championship. • South Asian Rope Skipping Championship 2024 (Nepal): Secured 2nd place. • India Book of Records (2x): Recognized twice for rope skipping achievements. • Asia Book of Records: Record holder in rope skipping.

AWARDS & HONORS

- **Best Paper Award**, ICISS 2026 (Track: Security and Privacy)
“Secure and Efficient Image Encryption for UAVs Using a 4D Chaotic System”

EDUCATION

2022 - present	BTech in CSE at SRM University AP	
2022	Class 12th CBSE at Happy Valley School	(79.2)
2020	Class 10th CBSE at Happy Valley School	(66.6)

CERTIFICATIONS

- **Python**
Certificate: [GUVI Certificate Link](#)
- **Microsoft Word**
Certificate: [GUVI Certificate Link](#)
- **MS Excel**
Certificate: [GUVI Certificate Link](#)
- **Introduction to Cybersecurity**
Certificate: [CISCO Certificate Link](#)
- **Foundations of Cybersecurity**
Certificate: [Coursera Certificate Link](#)
- **Vulnerability Scanning with Nmap: Network Scanning**
Certificate: [Coursera Certificate Link](#)
- **Wireshark for Security: Detect Network Anomalies**
Certificate: [Coursera Certificate Link](#)