

Rai Bahadur Singh

Computer Systems Engineer & Independent Consultant

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Cybersecurity · Artificial Intelligence · Cloud · IoT
“Think It, Build It, Achieve It”

About

Experienced and versatile Computer Systems Engineer specialising in **Cybersecurity** and **Artificial Intelligence**. Adept at delivering robust, scalable, and secure solutions for clients worldwide. Proven expertise in cloud computing, information security, and advanced analytics. Passionate about continuous learning, global perspectives, and remote work. Outside of work I enjoy reading books on history or philosophy and watching world cinema.

Experience

- Jul 2016 – Present **Independent Software Developer & Consultant, Freelance / Self-Employed**, Morinda, Punjab, India (Remote)
- Delivered end-to-end cybersecurity solutions for global clients, including vulnerability assessments and incident response.
 - Designed and implemented AI-powered analytics tools for business intelligence and automation.
 - Provided consulting on cloud migration, infrastructure security, and regulatory compliance.
 - Developed custom web and SaaS applications using modern frameworks and cloud platforms.

Education

- 2012 – 2016 **Bachelor of Engineering (B.E.) — Computer Science**, Panjab University, Chandigarh, India
- 2009 – 2011 **High School — Physical Sciences & Computer Science**, Public School, India

Skills

- Security Cybersecurity, Information Security, Network Security, Penetration Testing, Incident Response, Vulnerability Assessment
- AI / ML Machine Learning, Supervised Learning, Anomaly Detection, Computer Vision, Object Detection, Edge AI, NLP
- Programming Python, C/C++, HTML/CSS/JavaScript, MicroPython, Functional Programming
- Hardware Raspberry Pi (3/4/5/Pico W/Zero 2W), ESP32-CAM, Arduino UNO R3/R4, BBC micro:bit, Hailo-8 AI Accelerator
- Cloud & DevOps Cloud Migration, Infrastructure Security, Docker, n8n, ngrok
- Frameworks scikit-learn, OpenCV, YOLO, Home Assistant
- Languages English (native/bilingual)

Projects

Open-Source / GitHub

- GitHub **Wi-Fi Intrusion Detection System**, [flatmarstheory/Wi-Fi-Intrusion-Detection-System](#), 36 stars · 7 forks
Raspberry Pi Pico W based embedded Wi-Fi Intrusion Detection System (WIDS) — monitors nearby networks for rogue APs, deauth attacks, and anomalous traffic in real time. Python.
- GitHub **AI-Powered Insider Threat Detection System**, [flatmarstheory/ai-powered-insider-threat-detection-system](#), 11 stars · 7 forks
Detects insider threats using machine learning by analysing user behaviour, system-access logs, and anomalies. Includes an interactive dashboard, explainability tools, graph analysis, and red-team simulation. Python.
- GitHub **AI-Powered IDS for Home Networks**, [flatmarstheory/ai-powered-ids-for-home-networks](#), 13 stars · 5 forks
Lightweight, AI-enhanced Intrusion Detection System for home Wi-Fi. Uses machine learning to flag unusual or malicious traffic in real time with a modern dashboard and optional auto-blocking. Python.
- GitHub **IoT Risk Detect**, [flatmarstheory/iot-risk-detect](#), 11 stars · 1 fork
Desktop tool for real-time discovery, risk assessment, and botnet/anomaly detection of IoT devices on a local network. Python.
- GitHub **Cyber Battleground**, [flatmarstheory/cyber-battleground](#), 8 stars
Full-stack, hands-on cybersecurity simulation platform for learning, teaching, and demonstrating both offensive and defensive web security. HTML/CSS/JavaScript.
- GitHub **Self-Hosted n8n Telegram Bot**, [flatmarstheory/selfhosted-n8n-telegram-bot](#), 3 stars
Self-hosted n8n automation with Telegram bot integration and public webhook tunnelling via ngrok — all in Docker on an Ubuntu VM.
Hardware Prototypes & Demos (YouTube)
- 2025 **Suspicious Object Detection Using AI**, [YouTube · 307 views](#), ESP32-CAM + Raspberry Pi 5 + Hailo-8
Edge AI security prototype that streams live video from an ESP32-CAM to an RPi 5 running on-device YOLO inference to detect and alert on suspicious objects (e.g. knives/scissors) without cloud dependency.
- 2025 **Emergency Proximity Lock**, [YouTube · 243 views](#), Raspberry Pi Zero 2W + Pico W (BLE)
BLE-based proximity system that automatically locks a Windows PC when the user moves out of range — hands-free physical access control.
- 2025 **Network-Wide Ad Blocking**, [YouTube · 430 views](#), Pi-hole on Raspberry Pi Zero 2W
Demonstrates deploying Pi-hole as a network-level DNS sinkhole to block ads and trackers for every device on the LAN.
- 2025 **Cyber-Physical Locking System**, [YouTube · 548 views](#), ESP32-CAM · QR Cryptography
ESP32-CAM reads a cryptographically signed QR code and grants or denies physical access — marrying computer vision with access control.
- 2025 **BLE Clickjacking Sentinel**, [YouTube · 316 views](#), Arduino UNO R4 WiFi
Detects BLE clickjacking attempts in real time and streams events to a live web dashboard.
- 2025 **Wi-Fi IDS on Raspberry Pi Pico W**, [YouTube · 1.8K views](#), MicroPython · Embedded
Full demo of the open-source WIDS project running on a \$6 Pico W — detecting rogue APs and deauth floods without a PC.
- 2025 **Hardware-Based Password Generator**, [YouTube · 188 views](#), BBC micro:bit · Python
Generates cryptographically random passwords on an air-gapped micro:bit, displaying them on its LED matrix.
- 2024 **AI Book Reader & Summariser**, [YouTube · 96 views](#), YOLO + OCR + LLM
Computer vision pipeline that reads physical book pages in real time, extracts text via OCR, and summarises content with an LLM.

- 2024 **Telegram AI Agent in Docker**, [YouTube · 344 views](#), n8n · ngrok · Docker
Self-hosted conversational AI agent accessible over Telegram, running entirely on a local VM with public webhook tunnelling.
- 2024 **DIY Face Recognition**, [YouTube · 362 views](#), ESP32-CAM · Python
Runs face detection and basic recognition on an ESP32-CAM module, streaming annotated video over Wi-Fi.
- 2024 **Smart Home Integration Demo**, [YouTube · 1.5K views](#), Home Assistant · Raspberry Pi 4
Controls Philips Hue and TP-Link Tapo devices from a self-hosted Home Assistant instance on a Raspberry Pi 4.

Licences & Certifications

- Feb 2026 **Supervised Learning with scikit-learn**, *DataCamp*
Credential ID: 5c6edd45644653fd9447dc6c670283d95fdcebec
Skills: Python, Machine Learning, scikit-learn, Hyperparameter Tuning
- Feb 2026 **Functional Programming in Python**, *Boot.dev*
Credential ID: 99ee899a-dd65-498e-b505-4ecda3000935
Skills: Python, Functional Programming

Online Presence

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