Yogendra Singh

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EDUCATION

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
B.Tech. Major	Indian Institute of Technology Indore	9.12 (Current)	2024-Present
Senior Secondary	CBSE Board	94.2%	2024
Secondary	CBSE Board	98.4%	2022

PROJECTS

PolyRead – Multilingual OCR-to-Speech System *May – July 2025*
IITI-SoC 2025 *Code*

- Led development of a **modular OCR-to-speech pipeline** capable of extracting, detecting, translating, and vocalizing multilingual text from document and image inputs, enhancing accessibility for non-native readers.
- Designed a **dual-stage OCR architecture** using **PaddleOCR v4** to process multi-script text with high accuracy and robustness across languages, and **fine-tuned a RoBERTa transformer** on the **OSCAR multilingual corpus (10 languages)** for context-aware language recognition and translation improvement.
- Integrated **Google translation APIs** with **offline TTS (pyttsx3)** modules to support seamless text-to-speech conversion in both connected and offline environments, and built a **responsive web interface** with dynamic image upload, bounding-box visualization, and hover-based multilingual translation overlays for interactive user experience.

Sentinel AI – Advanced Cybersecurity & Citizen Engagement Solutions *Aug 2025*
Indore Tech Hackathon – Indore Smart City Development Limited (ISCDL) *Detailed Report*

- Led development of a comprehensive **AI-powered cybersecurity and citizen engagement platform** integrating phishing protection, deepfake analysis, live scam call detection, behavioral authentication, and AI-assisted grievance management for smart city governance.
- Developed the **Phishing Detection Chrome Extension** enabling real-time malicious website identification through dual detection (automatic and manual) with in-browser alerts and lightweight deployment for public use.
- Built the **Deepfake Detection System** utilizing computer vision-based frame analysis and feature extraction to identify manipulated videos and synthetic images, assisting in digital media verification and misinformation control.
- Implemented the **Live Scam Call Detection Module** that performs real-time speech-to-text conversion and NLP-based keyword intent analysis to detect fraudulent conversational patterns during active voice calls.
- Designed and integrated an **AI Chatbot for Cybercrime Support** capable of handling citizen queries, providing cyber awareness, and assisting users in guided grievance reporting; coupled with an **AI Evidence Summarizer** that condenses reports and prioritizes cases for faster redressal.

Multi-asset Portfolio Allocation using RL *Oct - Nov 2025*
EE213 Course Project *Code*

- Built a **PPO–LSTM based portfolio allocation agent** that learns adaptive **Buy/Hold/Sell** strategies from multi-asset time-series data using **20+ indicators and temporal patterns** captured through recurrent layers.
- Engineered a realistic trading and market simulation environment with **transaction costs, turnover penalties, and drawdown constraints** to enforce stable and risk-aware portfolio behaviour.
- Performed **indicator selection through correlation analysis**, removing redundant signals and retaining diverse trend, momentum, volatility, and regime features for stronger feature representation.
- Achieved **higher Sharpe (2.66) and smoother drawdowns** than an equal-weight benchmark on 15 years of historical market data, demonstrating consistently superior long-horizon robustness.

Adobe Content Intelligence Simulator *Sept – Oct 2025*
GDG Club, IIT Indore *Code*

- Built a **closed-loop AI system** for enterprise Twitter marketing, combining multimodal engagement prediction with optimized tweet generation to enhance content performance and brand consistency.
- Developed a **multimodal regression model** using **DistilBERT text embeddings and BLIP-2** visual features with log-transformed targets, improving engagement prediction stability and addressing heavy-tailed like distributions.
- Designed a vision-grounded tweet generation pipeline using **Florence-2 captioning, entropy-based video keyframe selection, and LoRA-fine-tuned Mistral-7B**, reducing perplexity from 10.12→3.63 and ROUGE-4 score of 0.57 .
- Demonstrated that **visual context and VLM grounding** are essential for realistic marketing content, outperforming text-only baselines ($R^2 = 0.17$) and establishing a scalable foundation for AI-assisted social media automation.

TECHNICAL SKILLS

- **Languages** C++, Python
- **Tools/Frameworks:** Pytorch, Scikit-learn,Matplotlib, NLTK, Pandas, NumPy, OpenCV, Transformers, HuggingFace, LLM/RAG*****, GenAI*****, RL, Fast API*****
- **Soft Skills:** Team-work, Leadership, Public Relations & Community Outreach   ***** *Elementary proficiency*

KEY COURSES TAKEN

- **Mathematics:** Linear Algebra, Calculus, Complex Analysis, Differential Equations
- **Electrical and Electronics:** Network Theory, Electronic Devices, Electrical Machines, Digital Systems, Fundamentals of Optimization, Electrical Machines Lab, Digital Systems Lab, Electronic Devices Lab

POSITIONS OF RESPONSIBILITY

- **Member** AI/ML Division, Google Developers Group(GDG) IIT Indore   *September 2025 -* ***Present***
- **Outreach Head**, Google Developers Group(GDG) IIT Indore   *October 2025 -* ***Present***
- **Trainee**, Autonomy Division, The Robotics Club, IIT Indore   *April 2025 -* ***Present***
- **Head Of Campus Relations**, E-Summit, Entrepreneurship Cell, IIT Indore   *July 2025 - August 2025*
- **Outreach Coordinator**, E-Summit, Entrepreneurship Cell, IIT Indore   *April 2025 - July 2025*

ACHIEVEMENTS

- Selected for the **Prototype Development Round** of the **Indore Tech Hackathon** by **Indore Smart City Development Limited (ISCDL)** for our project **Sentinel AI**. Presented the prototype during the first evaluation phase, and got ranked in the **Top 4** and invited for the **final presentation round** to determine the top 3 winners (results awaited).
- **JEE Mains 2024**, Scored 98.34 percentile in a pool of more than 14 lakh students
- **JEE Advanced 2024, AIR 7828** among more than 48,000 qualified students