

# GOPAL KRUSHNA MAHAPATRA

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## WORK EXPERIENCE

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### Python Developer Intern

Jan 2026 – Present

- Developed Python applications including calculators, games, and file-processing utilities with proper error handling and modular design.
- Built intermediate-level projects such as a command-line to-do list, web scraper, and API integration scripts using Python libraries.
- Gained exposure to advanced concepts including Django-based web applications, file encryption, and algorithmic problem-solving.

### Frontend Developer Intern

Dec 2025 – Jan 2026

- Developed responsive and user-friendly web interfaces using HTML, CSS, JavaScript, and React, ensuring cross-browser compatibility.
- Implemented modern UI/UX practices, reusable components, and optimized layouts to enhance user experience and performance.
- Collaborated with designers and backend teams to integrate APIs and deliver scalable, production-ready frontend solutions.

### Machine Learning Intern

Dec 2025 – Jan 2026

- Developed and implemented machine learning models for data analysis and prediction, focusing on accuracy, scalability, and performance optimization.
- Performed data preprocessing, feature engineering, and model evaluation using Python and popular ML libraries to derive actionable insights.
- Collaborated on real-world problem statements, translating business requirements into data-driven solutions through analytical and statistical techniques.

## PROJECTS

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### IoT-Based Smart Traffic Management System with 5G and AI-Driven Signal Optimization

- Designed an end-to-end smart traffic management system using edge AI and machine learning to optimize traffic signals based on real-time vehicle density and congestion prediction.
- Implemented real-time vehicle detection and traffic analysis using computer vision and ML models, with reinforcement learning-based adaptive signal control for dynamic green-time allocation.
- Integrated ESP32-based signal actuation with edge-to-cloud communication and simulation-driven validation to enable scalable, low-latency traffic optimization.

### TrueWrite Scan: AI-Powered Writing Assistant

- Designed and deployed TrueWrite Scan, an AI-powered SaaS platform for automated grammar correction and document intelligence using transformer-based NLP models and FastAPI.
- Built secure, scalable REST APIs with JWT authentication, multi-database integration, and end-to-end PDF/DOCX document processing pipelines.
- Implemented context-aware language analysis and correction workflows, delivering accurate, production-ready AI inference in a cloud-deployed environment.

## IoT-Enabled Early Forest Fire Detection and Autonomous Response Using Machine Learning

- Designed and implemented an IoT-based forest fire detection system using ESP32, environmental sensors, and machine learning for early risk prediction.
- Integrated cloud platforms for real-time data monitoring, visualization, and automated alerts to enable rapid response.
- Improved fire detection accuracy and response time through multi-sensor data fusion and intelligent threshold-based decision making.

## A Multi-Sensor IoT Framework for Fruit Spoilage Detection with Machine Learning-Based Prediction

- Developed an IoT-enabled system to collect real-time environmental and gas sensor data from apples for spoilage analysis.
- Trained and evaluated machine learning models to predict spoilage stages based on sensor data patterns.
- Demonstrated early spoilage detection capability to support food quality monitoring and waste reduction.

## AI Visual Storyteller

- Developed an AI-powered storytelling system using Gemini AI to generate coherent textual narratives and corresponding visuals from user prompts.
- Integrated automated image generation and story synthesis to create immersive, end-to-end storytelling experiences.
- Enabled multi-format content export, including PDF and audio, demonstrating expertise in AI integration and multimedia automation.

## EDUCATION

<b>2023 - Present</b>	<b>Bachelor of Technology</b>	<b>NIST University</b>	<b>CGPA: 8.9 /10.0</b>
<b>2021 - 2023</b>	Class 12th - CBSE	K. C. Public School	<b>70%</b>
<b>2020 - 2021</b>	<b>Class 10th - CBSE</b>	<b>K. C. Public School</b>	<b>84%</b>

## PUBLICATIONS

Mahapatra G. K., Padhi P., “*AI for Social Good & Resilience: Harnessing AI to Transform Society and Improve Quality of Life,*” *Odisha AI Symposium 2025 Proceedings*, SOA University, 2025.

## SKILLS

- Programming Languages: C, C++, Embedded C, Python, HTML5, CSS3, Java, Assembly Language, Verilog
- Hardware & Tools: Microcontroller Boards, Sensors & Actuators, Integrated Circuits, Raspberry Pi
- Technologies: IoT, Digital Logic Design, Analog Circuit Design, Wireless Communication, 5G Technology, AI, ML, Cybersecurity
- Soft Skills: Leadership, Critical Thinking, Decision Making, Creativity, Problem Solving, Teamwork, Time Management
- Tools: Arduino IDE, Thonny IDE, Wokwi, EDA Playground, VS Code, Colab, Jupyter, Github, Git Bash, Gemini, ChatGPT, Perplexity, Canva, Replit
- Platforms & Databases: Thingspeak, Blynk IoT, MQTT Broker, Vercel, Hugging Face, Tinkercad, Spabase, MongoDB Atlas, PostgreSQL