

# Om Nagvekar

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## About me

Aspiring AI professional with robust expertise in Python, API development, and advanced NLP techniques like Retrieval-Augmented Generation and Agentic AI. Proven track record in research and hands-on projects, consistently delivering quantifiable improvements. Seeking opportunities to leverage my skills to drive innovative AI solutions.

## Education

**KIT's College of Engineering (Autonomous), Kolhapur** 2021-2025  
*B.Tech in Computer Science (Artificial Intelligence and Machine Learning) Engineering*  
 ○ GPA: 8.41/10.0 Equivalent to 79.86%  
 ○ **Coursework:** AI, Linear Algebra, Statistics and Probability, Machine learning, Deep learning,

## Experience

**Research Intern** Remote  
*Shivaji University (Nanoscience Department)* Aug 2024 – Present  
 ○ Applying machine learning techniques (time series analysis and change point detection) to material science data.  
 ○ Developing a RAG-based system for research paper analysis to extract key scientific insights, potentially increasing data extraction efficiency by 50%.

**Machine Learning Intern** Remote  
*ArthaVedh Consulting Pvt Ltd* June 2024- Dec 2024  
 ○ Contributed to the development of machine learning models and synthetic data generation, improving training workflows by streamlining data pipelines by over 30%.

**Intern – Business Contract Validation** Remote  
*Intel Unnati Industrial Training Program* May 2024 – Aug 2024  
 ○ Automated validation of hundreds of business contracts by classifying and comparing them against standard documents, reducing manual review time by an estimated 40%.  
 ○ Implemented a RAG pipeline with a fine-tuned Phi-3 mini LLM to accurately identify deviations.

## Publications

**Managing Spam Images on Android: An Approach Utilizing Machine Learning and NLP** July 2024  
*Om Nagvekar* Sumeet Kurbetti, Parth Sarnobat, Uma Gurav, and Tanvi Patil.  
[10.1007/978-981-97-2550-2\\_59](https://doi.org/10.1007/978-981-97-2550-2_59) [🔗](#)

## Projects

**AI Garbage Prediction API (SIH 2024 Project)** [AI-Predictions\\_API](#) [🔗](#)  
 ○ Designed a FastAPI-based API to analyze images and videos in real time for garbage prediction.  
 ○ Using advanced LLM (ollama Phi: 3mini and Florence-2) to classify and quantify waste, achieving an estimated improvement in monitoring efficiency 20%.  
 ○ Tools used: Python, FastAPI, YOLOv11  
**GAN Research Implementation** [GAN Implementation](#) [🔗](#)  
 ○ Implemented and optimized various GAN architectures (GAN, DCGAN, WGAN, pix2pix) using PyTorch,

enhancing training stability and image quality through iterative experimentation with loss functions and hyperparameters.

- Tools used: Python, Pytorch

### Business Contract Validation Tool (BCVT)

[BCVT](#) 

- Built an automated tool for classifying and validating contracts using a TensorFlow model, RAG pipeline, and HuggingFace embeddings.
- Achieved 92.5% semantic similarity, 88.7% response relevancy, and 85.3% factual correctness across test cases.
- Integrated Gemini AOI (Gemini 2.0-Flash) for clause-level evaluation and Streamlit UI for PDF visualization.
- Tools used: Python, TensorFlow, LlamaIndex, Gemini AOI, Streamlit, ragas.

### Chef-Agent Knowledge-Graph Cooking Assistant

[Chef Agent](#) 

- Developed a streaming AI “Chef” agent using FastMCP + FastAPI, orchestrated via LangGraph workflows and backed by a Neo4j recipe knowledge graph.
- Implemented end-to-end tools for web\_search (Tavily/DuckDuckGo), web\_scraping (FireCrawl + BeautifulSoup), sandboxed Python execution, natural-language → Cypher graph queries, and URL-to-graph recipe ingestion.
- Enabled session personalization with in-memory/Redis store and auto-summarization of long conversations for enhanced user experience.
- Tools used: Python, FastAPI, FastMCP, LangGraph, Neo4j, Redis, FireCrawl, BeautifulSoup.

## Technologies

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**Languages:** Python, Java

**AI & ML Frameworks:** PyTorch, TensorFlow, Keras, LangGraph, Langchain, smolagents, FastMCP

**NLP & RAG:** Retrieval-Augmented Generation (RAG), LangChain, LlamaIndex, fine-tuning LLMs, LLM

**API Development & Tools:** FastAPI, Docker, Model Context Protocol (MCP)

**Research & Data Processing:** Data preprocessing, exploratory analysis, model evaluation, pandas, numpy

**Version Control:** Git, GitHub

**DevOps:** Docker, Kubernetes, AWS

**Additional:** Android Development, SQLite

## Certifications and Awards

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| ◦ LSAT (Lab Setup Automation Tool) PBL Day Winners                      | ◦ Google AIML Virtual Internship (JAN – MAR 2024)                          |
| ◦ ML and AI Workshop - Technex,IIT Varanasi                             | ◦ Amazon ML Challenge 2024 ranked 277 out of 2430 teams in top 12 percent. |
| ◦ Runner-up, Pioneer 2022 Runner-Up (Prakalp)                           | ◦ SIH 2024 Grand Finalist  |
| ◦ Data Analytics Process Automation Virtual Internship (SEP - NOV 2023) | ◦ Introduction to LangGraph by Langchain Academy                           |
| ◦ Japanese Language N5 level Certification NAT 5Q                       | ◦ AI Agents Fundamentals by Hugging Face                                   |

## Languages

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English : Professional working proficiency

Japanese : Elementary proficiency N5 level