

# TIRATH BHATHAWALA

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## OBJECTIVE

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Aspiring **AI researcher** focusing on **explainability**, **AI agents**, and **multimodal systems**. Strong industry experience in **LLM-driven automation** and **CV pipelines**; author on multiple peer-reviewed submissions (**one accepted**).

## EDUCATION

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### **SVKM's Dwarkadas J. Sanghvi College of Engineering**

*B.Tech in Computer Engineering with Honors in Intelligent Computing (CGPA: 9.29)*

Mumbai, India

Nov 2022 – Jun 2026

### **Mumbai Junior College of Arts, Commerce and Science**

*HSC Science with CS (12th: 91.5%, MHTCET rank of 719 among 200,000+ candidates)*

Mumbai, India

Jun 2019 – Jun 2021

## EXPERIENCE

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### **BrandContext.ai**

*AI Intern*

Mar 2025 – Aug 2025

*Hybrid, Mumbai, India*

- Finetuning an **LLM-driven automation framework (browser-use)** that independently performs user-specified queries on **websites (Looker Studio, Hootsuite, etc)** or Google Sheets by generating and executing custom **Playwright-based actions**.
- Developing an **AI-agentic system** powered by **dynamic graphs** and **real-time factory operation databases** to support **supervisor workflows**, **detect anomalies**, and dynamically incorporate **worker-input special conditions**.
- Evaluated and productionized computer-vision pipelines for retail supermarkets (**age/gender, queue, emotion, theft**) and fine-tuned **YOLOv11** multi-class detectors (**logo, furniture, mobile, security**) for **Xiaomi** deployments.
- Built legally-compliant **speaker-diarization** pipelines for sales–customer calls using open-source (**SpeechBrain**) and commercial (**ElevenLabs**) stacks to enable accurate speaker labeling and downstream analytics.

### **Indian Institute of Technology, Patna**

*Research Intern*

Oct 2024 – May 2025

*Remote, Patna, India*

- Designed **MetaSearch**, a **search-augmented, reasoning-based AI Agent** for **consensus resolution in peer review**, combining **disagreement detection** and **fact-grounded synthesis** to automate and enhance meta-review decision-making.
- Developed a novel LLM-argumentation system for peer review, evaluating 900+ ICLR reviews (**PeerRead Dataset**) using leading LLMs (**Llama 3.1, Mixtral, Gemini2, GPT-4o**), achieving high inter-annotator agreement (**Cohen's Kappa = 0.834**).
- Composed a heuristic framework, based on **Cognitive Load and Discourse Analysis theories**, for optimizing peer review lengths through information density analysis, integrating metrics for content relevance and argument strength.

### **Nvelop Technologies Oy**

*AI Intern*

Aug 2024 – Feb 2025

*Remote, Helsinki, Finland*

- Authored a whitepaper implementing an evaluation pipeline for **LLM-based requirement generation**, benchmarking **DeepSeek R1, GPT-4o, Gemini 2.0, LLaMA 3.2** across diverse **NLP metrics** including BLEU, Levenshtein and Jaccard Similarity.
- Devised automated workflows in **Azure AI Promptflow** for Retrieval Augmented Generation (RAG) tasks, for 50+ RFPs.
- Optimized chunking strategies and top-p sampling parameters, **reducing document retrieval perplexity by 15%**.
- Authored a **comprehensive 70-page documentation** detailing the mapping of AI APIs (**Insomnia**) to the frontend (**NextJS**).

### **UIUC+ Summer Research Program**

*Research Assistant*

June 2024 – July 2024

*Remote, Urbana-Champaign, USA*

- Investigated challenges in **C to Rust transpilation**, summarizing findings from 5+ research papers (**VERT, Lost in Transilation, etc.**) and evaluating the results of existing transpilers and CodeLLMs.
- Analyzed LLM-generated C and Rust code, identifying and categorizing bugs, improving **code quality evaluation frameworks**.

### **PavePilot AI**

*Python (LLM) Development Intern*

June 2024 – July 2024

*Remote, USA*

- Established an AI-driven marketing content pipeline by evaluating multiple image models (**BRIA, Stable Diffusion, Midjourney**) and implementing image processing techniques with **OpenCV**.
- Created platform-specific content (**LinkedIn, Instagram, Twitter**), designing customized AI-generated prompts and style guides for **brand-aligned product advertisements** using GenAI tools.

## RESEARCH PUBLICATIONS

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Dynamic Optimization of Peer Review Length Using Information Density Analysis (Accepted in Scientometrics)

MetaSearch: Search-Augmented LLM with Reasoning for Consensus Resolution in Peer Review (Under Review in Scientometrics)

From Black Box to Glass House: Argumentation Theory as a Bridge Between LLM Opacity and Peer Review Transparency (Under Review in International Journal of Artificial Intelligence in Education)

## EXTRA CO-CURRICULAR

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DJSCE ACM | *Research Head*

- Established personalized research mentoring program for **15+ students**, successfully placing **5 mentees in competitive research internships** through targeted guidance in domain-specific learning and academic paper writing.
- Designed tasks in **python, research methodology, and technical writing** to enhance mentees' skills in structured research.

## PROJECTS

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DigniFy | *HuggingFace, TensorFlow, Render, FastAPI*

- DigniFy is an AI-powered **mobile application** for **multimodal, multilingual** hate speech detection.
- Fine-tuned **DistilRoBERTa** for English and Hinglish text, implemented **OCR-based text extraction** for images, designed an **audio processing pipeline** with STT-TTS, and integrated all modalities into a unified **video processing pipeline**.
- Engineered an **AI Agent** integrating all modality-specific models as tools, enabling detection through interaction with four LLMs (**DeepSeek R1, GPT-4o, Gemini 2.0, LLaMA 4.0**), and conducted comparative evaluation across model outputs.
- Authoring a **research paper** detailing the system's need, methodology, performance, and real-world impact.

Optima | *OpenCV*

- Optima revolutionizes healthcare through real-time analysis of asthma pump usage, implementing **posture detection, shake tracking, and pump-to-face distance measurement** to provide patient behavior insights and treatment recommendations.

RakshakRita | *BERT, NLTK, Seaborn, networkx, Plotly*

- RakshakRita is a **QR-based Police Feedback System** empowering citizens to voice policing opinions, featuring **dynamic feedback reports** with interactive **geo-spatial visualizations** of police station performance.
- Implemented NLP tasks like **language translation, zero-shot classification, spam detection, chatbot creation**.

ML and CV Fundamentals | *Tensorflow, Keras, PyTorch*

- Implemented **medical image segmentation** models for the **RSNA Breast Cancer dataset** (pydicom, torchvision).
- Evaluated various CV models for **object detection** and **image classification** on **Oxford-IIIT, MNIST, CIFAR10** datasets.

## TECHNICAL SKILLS

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**Relevant Coursework:** AI, ML, Data Structures & Algorithms, Data Warehousing & Mining, Advanced DBMS, OS

**Programming Languages:** Python, C, C++, Java, HTML/CSS, JavaScript, SQL, React, Rust, L<sup>A</sup>T<sub>E</sub>X

**Tools:** Linux, Git, Kaggle, Google Colab, Docker, Azure AI, Overleaf

**Frameworks/Technologies:** Tensorflow, Keras, PyTorch, OpenCV, Transformers, NLTK, FastAPI, HuggingFace, scikit-learn

**Course Certifications:** CS50P by Harvard University (Online), The Odin Project

**Coding Profiles:** CodeChef LeetCode HackerRank

**Exam Scores:** TOEFL iBT (Sept 2025) = 112 (R:29, L:29, S:25, W:29), GRE General Test (Sept 2025) = 332 (Q:170, V:162, AW:4.0)

## ACHIEVEMENTS

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All India Rank 499 in GATE Data Science and Artificial Intelligence examination from over 60,000 students

Winner in CodeBounty 2024, a college competitive programming contest with 100+ registrations

Top 100 in the Rajasthan Police Hackathon 2024 (ML Lead) out of 1000+ teams

Top 200 in the Gujarat G20 Summit Hackathon 2023 (ML Lead) out of 2500+ teams

Rank 292 out of 70,000+ registrations in the Amazon ML Challenge 2024

Selected as a mentee in the sktime mentoring program under Dr. Franz Kiraly