Tirath Bhathawala

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OBJECTIVE

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

SVKM's Dwarkadas J. Sanghvi College of Engineering — Mumbai, India
B.Tech in Computer Engineering with Honors in Intelligent Computing ***(CGPA: 9.29)*** — *Nov 2022 – June 2026*

Mumbai Junior College of Arts, Commerce and Science — Mumbai, India
HSC Science with CS (12th: ***91.5%****, MHTCET rank of* ***719 among 200,000+ candidates)*** — *2019 – 2021*

EXPERIENCE

BrandContext.ai — Mar 2025 - Aug 2025
AI Intern — *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 — Oct 2024 - May 2025
Research Intern — *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 — Aug 2024 - Feb 2025
AI Intern — *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 — June 2024 - July 2024
Research Assistant — *Remote, Urbana-Champaign, USA*

- Investigated challenges in **C to Rust transpilation**, summarizing findings from 5+ research papers (**VERT, Lost in Translation, 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 — June 2024 - July 2024
Python (LLM) Development Intern — *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

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

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

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** (target: **Journal of Computational Social Science**) 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

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, LaTeX
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

ACHIEVEMENTS

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