

Satyam Mishra

AI Engineer/Researcher

Hanoi, Vietnam

Email:

satyam.entprnr@gmail.com

Phone: +84348799562

Google Scholar: [Satyam Mishra](#)

[Google Scholar](#)

LinkedIn: [LinkedIn Profile](#)

Objective

Exceptionally driven AI engineer and researcher with over 5 years of professional and academic experience, specializing in Generative AI (GenAI), Natural Language Processing (NLP), Machine Learning (ML), and Computer Vision. Highly skilled in AI feature development, backend and frontend integration, and innovative solutions published in prestigious international conferences. Recognized for research leadership with 10+ internationally published research papers, 8+ more in progress aiming for Q1 Scie Journals and A* Conferences, and extensive expertise in building Applied AI solutions, Digital Signal Processing, and NLP.

Research Interests

Artificial Intelligence (AI), Natural Language Processing (NLP), Computer Vision, Explainable AI (XAI), Deep Learning Optimization, Multimodal Learning, Transformer Architectures

EXPERIENCE

Vision Mentors LLC, Hanoi, Vietnam — *Artificial Intelligence Consultant/Senior Tech Lead*

December 2023 - Present

- Leading and Building LMS project team for the education sector, integrating AI for personalized learning.
- Leading and Building SAT MOCK TEST Platform team focused on integration and innovation of AI Features for it.
- Designed user-friendly educational software and automated administrative tasks.
- Ensured successful project delivery and continuous software enhancement.
- Developed AI Agent and customized workflow for platforms sync work management

Verysell AI, Verysell Technologies, Nyon, Switzerland —Independent AI Consultant

February 2024 - May 2024 (4 Months)

- Led a GenAI project integrating OpenAI GPT-4 Turbo and LangChain for customer content generation.
- Developed an AI recommendation engine for PR journalists.
- Implemented RAG-based LLM Data Chatbots with a 90.3% accuracy score.
- Customized AI bots for internal company tasks, deployed them on MS Teams.

SKILLS

Machine Learning:

- Model Development, Algorithm Selection, Feature Engineering, Evaluation Metrics, Model Optimization

Programming Languages:

- Python, C/C++

Frameworks and Tools:

- TensorFlow, PyTorch, Streamlit, FastAPI, VectorDB (ChromaDB, Pinecone), Langchain

AI Technologies:

- Machine Learning, Digital Signal Processing, Generative AI, Data Augmentation, Agentic AI, OpenCV

Backend/Frontend Development:

- MySQL, Full Stack Development, APIs, FastAPI, Docker, HuggingFace, Flask, Django, MCP-A2A

Project Management:

- Jira, Task Management, Collaboration Tools

Soft Skills:

- Strong Problem-Solving, Communication, Cross-Functional Teamwork

- Developed AI Agent for task automation as an internal project
- Delivered AI business solutions for multiple clients.

VNU Information Technology Institute SISLAB, Hanoi, Vietnam —Research Intern

February 2023 - July 2023 (6 Months)

- Designed and implemented IoT systems using RISC-V multicore architecture.
- Integrated hardware and software components for IoT applications.
- Tested and debugged systems to ensure high-quality performance.

Mahila Khadi Gramya Sewa Sansthan, U.P., India —Software Engineer

July 2013 -November 2016 (3 years)

- Developed and maintained the EShakti software for a government project funded by NABARD.
- Managed and updated website content, ensuring accuracy and consistency.
- Promoted social campaigns with innovative ideas and coordinated cross-department alignment.
- Implemented promotional content and executed online marketing strategies.
- Enhanced website visuals and user experience, creating campaign-specific pages and multimedia.
- Provided IT software training, troubleshooting support, and mentored colleagues for proficiency.
- Delivered training materials and fostered a tech-savvy office environment.



EDUCATION

KAIST, DAEJEON, South Korea — MS + PhD- *AI*

September 2025 - October 2030

Vietnam National University, Hanoi, Vietnam — Bachelor's *Degree- Informatics and Computer Engineering*

February 2020 - October 2023

- High Distinction
- GPA: 3.61/4.0
- Valedictorian Award

Excel Net Computer Education Centre, Barabanki, India — *Master Diploma*

June 2010 - September 2011

- Procured Good Grade
- 15 Month Extensive CS Training



AWARDS

Second Prize in 13th Student Research Conference | Vietnam National University, Hanoi

Best Presentation Award in 13th Student Research Conference | Vietnam National University, Hanoi

5 Best Student Award/Sinh Vien 5 Tot | Vietnam National University, Hanoi

Best Presentation Award | 5th International Science Forum 2021 | HCMC Youth Forum. HCMC, Vietnam

Valedictorian Award | Vietnam National University, Hanoi

LANGUAGES

English (Fluent), Hindi (Fluent), Russian (Beginner), Korean (Beginner)

Some Project Links:

- [Streamlit \(imagecbai.streamlit.app\) | \(Used Streamlit, Transformers, Torch, Pillow and Python\)](#)
- [MistralAI Chatbot by Satyam - Streamlit \(cbbysatyam.streamlit.app\) | \(Used Streamlit, Replicate, DotEnv, Python, and OpenAI\)](#)
- [Streamlit \(t5_model_summary.streamlite.app\) | \(Used Streamlit, Datasets, Transformers, Torch and Pandas\)](#)
- [satyamcser/AI-Agent](#)

PROJECTS

Research-Driven AI Agent – LangChain + Gemini + Tool Calling

Developed a research-grade AI agent system integrating Google Gemini (gemini-1.5-flash), LangChain, and real-time tool calling (DuckDuckGo). Engineered to perform autonomous reasoning and structured research outputs using Pydantic parsing.

Automation of Robot with Nvidia Jetson Nano Board

Developed a self-driving robot car with deep learning and AI techniques for collision avoidance, path following, and image recognition.

SATMeas - Object Detection and Measurement

Developed a real-time object detection and dimension measurement system using computer vision techniques. Achieved over 98% accuracy

Conversational AI with MistralAI

Built a Chatbot with Mistral-7B-v0.1. Built a chatbot with Mistral AI was an enlightening experience. The combination of Mistral-7B-v0.1's power and Streamlit's simplicity makes it accessible for developers at all levels. Keep in mind that Mistral 7B is a pre trained base model without moderation mechanisms, so be mindful of the generated content. .

Email Sentiment Analysis using Hugging Face Transformers

Built a platform to analyze the email content, predict sentiment using NLTK and generate response using GPT-2 language model and LLMLM.

and many GenAI/Computer Vision Projects as part of the company, can't be mentioned because of an NDA signed by my company.



PATENTS

- **Title:** *System and Method for Modeling Semantic Drift in Language Models using Koopman Operators*

Status: Published in Indian IPR | Now at Examination Stage

Summary: This invention introduces a novel dynamical systems-based framework to track, model, and mitigate semantic drift in large language models using Koopman spectral operators. It improves long-term stability and interpretability in NLP systems by applying physics-inspired transformations to language evolution over time.

Ongoing Research:

1. **KoopMO for One-Shot Robotic Motion Planning**
| Target: TRO

Developing a Koopman neural operator-based model that generates full robot trajectories in one shot, enabling faster, physics-constrained, and generalizable motion planning without iterative rollouts.

2. **Chebyshev Attention Mechanism for Transformers** | Target: NeurIPS 2025

Proposing a Chebyshev distance-based attention mechanism to improve transformer efficiency and adaptability in high-dimensional tasks across NLP and multimodal domains.

Libraries Published (Open-Source Contribution):

- [saferl-lite-PyPI](#)

- **Title:** *SpectralONN: System and Method for Spectral-Domain Learning in Neural Networks using Functional Operator Theory*

Status: Stage 1 Approved (Filed in India)

Summary: This invention presents a novel neural network framework that operates in the spectral domain using learnable functional operators. Unlike traditional spatial-domain architectures, this system transforms input signals using Fourier and Chebyshev bases and learns bounded linear operators on the frequency components. It enables interpretable, phase-aware learning with theoretical guarantees on stability and generalization, making it particularly effective for biomedical signal processing and time-series applications.

- **Title:** *C3QG: System and Method for Confidence-Calibrated Question Generation using Conformal and Contrastive Learning*

Status: Stage 1 Approved for Publication (Filed in India)

Summary: This invention proposes a question generation system that incorporates conformal prediction and contrastive learning to generate diverse, accurate, and confidence-aware questions. The method predicts sets of valid questions with statistical guarantees, ensuring reliable uncertainty estimation in generative NLP tasks. By integrating semantic similarity constraints and probabilistic calibration, it enhances interpretability and safety in educational, legal, and healthcare question-answering systems.

- **Title:** *Sparse Is Smart: Efficient 3D Point Cloud Transformers Without Positional Encoding*

Status: Stage 1 Approved (Filed in India)

Summary: In this invention, we proposed Sparse Block Attention (SBA), a novel transformer architecture that enhances both computational efficiency and classification performance. SBA partitions the point cloud into local neighborhoods using k-nearest neighbors and applies attention only within these blocks, thereby reducing the computational complexity from $O(N^2)$ to $O(Nk)$. Notably, we eliminate the use of positional encoding altogether and demonstrate that the model can still capture geometric structure effectively through localized attention.



Research Publications | Projects Worked

Google Scholar Profile: <https://scholar.google.com/citations?user=S8LSoAAAAAJ&hl=en>

Publications Submitted / Published in Q1 Scie/A*

1. Modeling Semantic Drift with Koopman Operators: A Dynamical Systems Approach | **Under Review in TASLP Journal** | **First Author**
2. C3QG: Context-Controlled, Explainable, and Efficient Question Generation with Transformers | **Under Review in CS&L Journal** | **Second Author**
3. One-Shot Human Motion Synthesis via Koopman Neural Operators: A Physics-Guided, Contrastive Learning Framework | **Submitted to IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI) Journal** | **First Author**

4. SpectralONN: Phase-Aware Functional Operator Networks for Interpretable Frequency-Domain Learning | **Under Review in *Information Fusion* | First Author**
5. KoopFall: Koopman + LSTM Hybrid for Fall Detection from Multimodal Sensor Data | **Under Review in *Multimedia Tools and Applications Journal* | First Author**
6. EDL-HJAE: Multimodal Gait Analysis Using Ensemble Deep Learning and Hip Joint Asymmetry Evaluation | **Under Review in *Multimedia Tools and Applications Journal* | Second Author**
7. Sparse Is Smart: Efficient 3D Point Cloud Transformers Without Positional Encoding | **Under Review in *Information Sciences Journal* | Second Author**
8. Spectral Drift Reveals Hallucination: Unsupervised Quantum-Inspired Signals in LLMs | **Submitted to EMNLP (ACL ARR MAY 2025) | First Author**
9. Obey the Automaton: Learning Grammar-Constrained Generation with Soft RL | **Submitted to NeurIPS 2025 | First Author**
10. Latents Don't Lie: Measuring Semantic Entropy for Better Alignment in Language Models | **Submitted to NeurIPS 2025 | First Author**
11. Strika: Triple-Term Contrastive Learning with Selective State Spaces for Fast and Interpretable Text Dynamics | **Submitted to NeurIPS 2025 | Second Author**

Peer-Reviewed Conference Papers & Projects

12. Automated Robot (Car) using Artificial Intelligence | **First Author**
13. Lightweight Authentication Encryption to Improve DTLS, Quark Combined with Overhearing to Prevent DoS and MITM on Low-Resource IoT Devices | **First Author**
14. SATMeas - Object Detection and Measurement: Canny Edge Detection Algorithm | **First Author**
15. Vaccination Inventory System for justified user using Natural Language Processing | **Second Author**
16. Using Security Metrics to Determine Security Program Effectiveness | **First Author**
17. Detecting Stroke in Human Beings using Machine Learning | **Second Author**
18. Predicting Breast Cancer in Human using Machine Learning | **Second Author**
19. Efficient Face Mask Detection for Banking Information Systems | **Second Author**
20. Mitigating the Threat of Multi-Factor Authentication (MFA) Bypass through Man-in-the-Middle Attacks using EvilGinx2
21. Reviewing User Interface Design & Usability in Information Systems | **Second Author**
22. Understanding the Impact and Implications of Emagnet and Pastebin in Cybersecurity
23. Integrating State-of-the-Art Face Recognition and Anti-Spoofing Techniques into Enterprise Information Systems | **First Author**
24. Debugging Human Pose Estimation with Explainable AI | **First Author**
25. Immersive Virtual Painting: Pushing Boundaries in Real-Time Computer Vision using OpenCV with C++ | **First Author**
26. MACCHIEF—Machine learning-based Algorithm Classification for Complaint Handling and Improved Efficiency in Firms
27. DICKT—Deep Learning-Based Image Captioning using Keras and TensorFlow | **Second Author**
28. BNIS-Bot Node Isolation Strategy to Prevent DoS Attacks: An Improved Overhearing Solution | **First Author**
29. Advancing Online Education: An Artificial Intelligence Applied System for Monitoring and Improving Employee Engagement in Enterprise Information Systems
30. SafeRL-Lite: A Lightweight, Explainable, and Constrained Reinforcement Learning Library | **First Author**

Books Published

1. AI Meets Pure Math: Issue #1: Live at [Amazon](#)
2. Math for Robotics: Learn All the Math You Need to Excel in Robotics



References

- **Prof. Dr. Vishwanath Bijalwan** | Assistant Professor, CSE & AI, S R University, India
Email: vishwanath.bijalwan@sru.edu.in
Phone: +918126937623
- **Prof. Dr. Le Trung Thanh** | Rector, International School - Vietnam National University, Hanoi
Email: thanh.le@vnu.edu.vn
Phone: +84985848193
- **Prof. Dr. Abdul Mannan Khan** | University of West London, UK
Email: khanabd@uwl.ac.uk
- **Mr. Charles Lee Kim** | CEO, Vision Mentors Vietnam
Email: charles.kim@visionmentorsvn.com
Phone: +84344630618
- **Mr. Yurii Lozinskyi** | Head of Vervysell Group Applied AI Lab, Vervysell Group, Switzerland
Email: lozinsky@gmail.com

Future Plans

- Seeking long-term opportunities in AI Research and Application.
- Looking for new business challenges to solve using ML, DL, NLP, GenAI.
- Committed to continuous learning, skill upgrades, and contributing to business solutions.