

NILESH MISHRA

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Education

National Institute of Technology, Calicut

Master's of Technology in Computer Science Engineering (CGPA of 8.51)

August 2024 - May 2026

Kerala, India

Amity University, Kolkata (CGPA of 6.73)

Bachelor of Technology in Computer Science Engineering

August 2017 - May 2021

West Bengal, India

D.A.H.S +2

Bihar State Education Board (64.2% 80 percentile)

May 2015 - May 2016

East Champaran, Bihar

Shri Krishna Diwakar H/S

Bihar State Education Board (67.4% 90 percentile)

May 2012 - May 2013

East Champaran, Bihar

Experience

UBK Infotech pvt ltd

Aug 2022 - Jan 2024

Kolkata, India

Front End Developer (**React Js**)

- Worked on a React.js-based ERP platform used by 40+ institutions, reducing manual data entry efforts and enabling real-time reporting.
- Built 70+ responsive UI screens with Material UI, AntD, improving user engagement metrics.
- Integrated 40+ REST APIs, enabling real-time data sync across users and devices.
- Led the development of the Attendance Management System, translating Figma designs into responsive React components, achieving 90% design consistency.
- Tech Stack: React.js, REST APIs, Material UI, Axios, AntD,

Sunrise Mentors Private Limited (Coding Ninjas)

Aug 2023 - Nov 2023

Gurugram, India

React Js Mentor

- Mentored 50+ students in React.js over 3 months.
- Provided one-on-one doubt resolution, achieving a 90% student satisfaction rate and significant improvements in project quality.

Web Prism IT Solutions | (certificate)

May 2020 - June 2020

West Bengal, India

Machine Learning Intern

- Developed a lane detection system with 95% accuracy, reducing false detection rates by 40% and improving processing time by 30% using OpenCV's optimized Canny edge filters.
- Implemented **Canny edge detection** to enhance feature recognition, improving processing efficiency by 30%.

Projects

Court Case Summarizer | NLP, BART-base | 🏷️

Completed

- Engineered a legal text summarization system using the **BART-base** model, reducing document length by 80% while retaining critical information.
- Preprocessed and structured over 10,000 legal documents, optimizing input for model training and improving accuracy by 15%.
- Fine-tuned the **BART-base** model with domain-specific embeddings to handle complex legal terminology effectively.
- Evaluated summarization quality with **ROUGE** and **BLEU** metrics, achieving scores of 0.75 and 0.68, respectively.

Hybrid Gaussian–Sinusoidal Positional Encoding for Transformer Summarization

Ongoing

- Designed and implemented a **novel hybrid positional encoding** combining sinusoidal and Gaussian functions to enhance contextual understanding in transformer-based summarization models.

- Introduced **dimension-wise Gaussian scaling** using parameters $(\mu, \sigma, s_{min}, s_{max})$ to capture both **local and global positional dependencies** across embedding dimensions.
- Optimized encoding parameters using a **Genetic Algorithm (GA)** for hyperparameter tuning, leading to an average **4.8% improvement in ROUGE-L** and **3.9% improvement in BLEU** over baseline sinusoidal encodings.
- Conducted fine-tuning on **BART, Flan-T5, RoBERTa, and LLaMA** using benchmark datasets (CNN/DailyMail, XSum, Gigaword).
- Generated and analyzed attention heatmaps and ablation studies, confirming better long-range dependency modeling and improved summary coherence.

Achievements

- **Engineering Rings of Honour (2025)** – Secured **All India Rank 57** among 8000+ participants from IITs, NITs, and IIITs; achieved **Rank 1 in college**.
- Qualified **GATE (Graduate Aptitude Test in Engineering)** in two streams: **CSE – 2024** and **Data Science – 2025**.

Publications

A Survey on Low Resource NLP in Maithili Language

Under Review – Springer, 2025

- Comprehensive survey of NLP tools, datasets, and challenges for Maithili — a low-resource Indic language.
- Reviewed 20+ existing works and identified key gaps in linguistic resources and model coverage.
- Proposed a future roadmap to accelerate Maithili NLP research; submitted to Springer (under review).

Technical Skills

Languages: Python, C++, JavaScript, C

AI/ML: Machine Learning, Deep Learning, Data Science, NLP (NLTK, SpaCy, Transformers, LLMs)

Data Science & Tools: Pandas, NumPy, Scikit-learn, TensorFlow, PyTorch, Hugging Face, Matplotlib, Seaborn,

Platforms: Git, GitHub, VSCode, Postman, Docker, Kubernetes, Microservices Architecture