

# NILESH MISHRA

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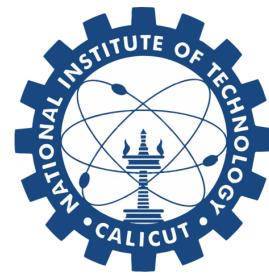
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🌐 [nileshmishra.info](https://nileshmishra.info)

💻 [leetcode.com/thenilesh](https://leetcode.com/thenilesh)



तमसो मा ज्योतिर्गमय

## 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

Bachelor of Technology in Computer Science Engineering

August 2017 - May 2021

West Bengal, India

## 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

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- **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

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***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

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**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