

# SHALIKA KUMBHAM

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## EDUCATION

University of North Carolina at Chapel Hill

Aug 2024 - June 2026\*

M.S, Computer Science

4.0/4.0

Indian Institute of Technology, Kharagpur

July 2018 - April 2022

B.Tech, Mechanical Engineering and Computer Science

8.45/10

**Relevant courses:** Machine Learning, Natural Language Processing, Software Lab, Computer Architecture and Operating Systems, Data Analytics, Complex Networks, Data Structure and Algorithm

## PUBLICATIONS

**PrePrint** : Shalika Kumbham, Abhijit Debnath, Krothapalli Sreenivasa Rao. "Efficient Indexing of Meta-Data (extracted from educational videos)".

## SKILLS

**Programming Languages:** C++, C, Python, Java, JavaScript, SQL

**Utilities & Libraries** : OpenCV, NumPy, Scikit-Learn, SNAP, NetworkX, Matplotlib, EasyOCR, Pandas, Git

## INDUSTRIAL EXPERIENCE

Application Developer

July 2022 - August 2024

Oracle India Pvt. Ltd.

- Led the full-cycle development of a **Peer Appreciation application**, including designing and implementing database models, task management, resulting in on-time project delivery and **system scalability**.
- Engineered UI pages, created **REST APIs** and parallelized REST calls to improve page loading time by **50%**.

Machine Learning Intern

June 2021 - August 2021

Felix Health Care

- Curated a dataset for **forgery detection** and expanded its scope by cropping parts from the same image.
- Employed F1 Score as an evaluation metric and implemented the most effective Deep Learning Model achieving **75% accuracy**.

## RESEARCH EXPERIENCE

Classifying Mental Manipulation using LLMs

August 2024 - Present

*Prof. Snigdha Chaturvedi*

- Investigated limitations in LLMs like **Llama, Mistral, Gemma..** etc by analyzing biases, dataset constraints, and contextual gaps affecting manipulative text detection.
- Improved baseline accuracy by **10% on a 2.5x larger dataset** compared to the base paper by designing and implementing advanced prompting techniques for model optimization.

TryOnDiffusion Integration Project

January 2025 - May 2025

*Collaborators: Microsoft, Prof. David Sttots (CSE)*

- **Fine-tuned diffusion-based models** (TryOnDiffusion) to generate user-specific virtual try-on images, leveraging pre-trained models and optimizing them for consistent, high-quality results.
- **Designed a feature** allowing users to upload self-images and product selections, generating photorealistic try-on previews to simulate wearing selected fashion items.

Efficient Indexing of Meta-Data (extracted from educational videos)

*Prof. Krothapalli Sreenivasa Rao (CSE) — Bachelor's Thesis Project*

August 2021 - April 2022

- Enhanced the existing **indexing system** by integrating Tesseract OCR, Easy OCR, and keyframe detection methods, improving accuracy to **86%** through Fuzzywuzzy and Spacy NER integration.
- **Curated a comprehensive dataset** using Youtube-dl and FFmpeg, sourcing educational content from NPTEL and MIT OCW for model training and evaluation.