

# Shashank Krishna Vempati

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## Education

### Indian Institute of Technology Delhi (IIT Delhi), India

Master of Science (Research) in Artificial Intelligence, Department Rank - 1

July 2022 – July 2025

Current GPA: 9.58

Guide: Prof. [Chetan Arora](#), Area of Research: Computer Vision (Optical Character Recognition)

### SASTRA DEEMED University - Thanjavur, India

Bachelor of Technology in Information Technology, Department Rank - 1

Aug 2018 – June 2022

GPA: 9.24

## Experience

### Typeface.AI | ML Engineer 1

July 2025 – Present

- Developed a scalable, preservation-oriented video generation framework from scratch that converts simple 3D assets into high-quality videos through automated and optimized view selection and 3D re-projection ensuring seamless product integration.
- Enhancing Typeface's chat agent with context-aware meta-intelligence and a follow-up generation system that dynamically scales across workflows to deliver personalized content recommendations.

### Newron AI | Research Intern

Feb. 2025 – March 2025

- Designed a robust pipeline to detect forgeries in VISA MRZ sections by normalizing image layouts, extracting MRZ zones, and using a lightweight CNN classifier to identify tampered characters, achieving 84% recall.

### Salesforce | Associate Technical Consultant Intern

Feb. 2022 – July 2022

- Specialized in Salesforce CRM, with a foundation in Apex programming. 1x Trailhead Ranger certified.
- Engineered a two-factor authentication (2FA) integration site using Salesforce SOAP API for the Qatar Airways project, enhancing user security and experience.

## Skills

- **Languages:** Python, C++, C, SQL, Java, MatLab, Apex (Salesforce Development), L<sup>A</sup>T<sub>E</sub>X
- **Tools & Libraries:** PyTorch, OpenCV, Scikit-Learn, VS-Code, Azure DevOps, Linux, NumPy, Tableau, Salesforce CRM
- **Relevant Coursework:** Intro. to ML, Computer Vision, Digital Image Processing, Adv. Computer Vision, NLP, Deep Learning
- **Programming:** [Leetcode Profile](#) - Solved 500+ problems, ranked in top 10%

## Projects

### Enhancing Spatial Text Understanding in MLLMs | Work under review, IIT Delhi

Nov. 2024 – July 2025

- Identified key limitations in MLLMs (e.g., QwenVL, InternVL) in interpreting and localizing spatially embedded text in images.
- Proposed a reverse localization framework with three instruction-tuning tasks, supported by a 27K QA pair dataset, resulting in an average 10% accuracy boost across diverse datasets, especially on dense scene text images (>90 words/image).
- Exposed a crucial gap where the LLM under-utilizes visual features due to modality biases and selective feature suppression.

### Two-stage Hierarchical Text Detection Framework | Accepted in ACM ICVGIP 2025

Aug. 2024 – May 2025

- Proposed a hierarchical text segmentation framework leveraging the SAM backbone and Def-DETR decoder.
- Implemented adaptive tiling to handle multi-resolution images, resulting in a 16% boost in F1 score on high-res datasets.
- Surpassed SoTA benchmarks across 9 diverse datasets, including cases like curvy text, small fonts, and multi-script scenarios.

### Lipikar - An E2E OCR System for Indian Languages | Project, IIT Delhi

March 2023 – Jan. 2025

- Spearheaded a team of 3 MTech students and 2 RAs in the development and deployment of word-level OCR models capable of recognising both Printed and Scene text across 22 official **Indian languages**.
- Integrated these models into the [Lipikar](#) platform successfully as part of the **Government-led Bhashini AI** initiative.

### Line-level OCR: Redefining the Standard | Project, IIT Delhi

Dec. 2023 – July 2024

- Developed a transformer-based line-level OCR method that improves WRR (Word Recognition Rate) by 4-5% compared to traditional word-level pipelines. Reduced line recognition errors through internal language modeling, enhancing overall accuracy.
- Achieved a 4× **speedup** in E2E OCR performance and **contributed** 250 annotated images to advance model evaluation.

## Leadership & Academic Achievements

- **Lead & Organized** logistics for the School of AI (ScAI) Seminar Series at IIT-Delhi.

- **Competitive Exams:** GATE-2022 (Rank: 746), GATE-2021 (Rank: 3203), JEE-Mains-2018 (Top 5%)

- **Dean's Merit Scholarship** (SASTRA University): Top 2% - Awarded Thrice