

# DARSHAN MAKWANA

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WEBPAGE: <https://martianlantern.github.io>

My name is Darshan Makwana and I'm a Machine Learning Engineer at [Sprinklr](#) working on LLM Sys and real time voice AI systems. Previously, I was a Research Assistant at [Aalto Vision Lab](#) working on 3D Gaussian Splatting and also did research internships at [TU Munich](#) on quadruped robotics and [Hexo AI](#) on diffusion models.

I graduated from [IIT Bombay](#) with a B.Tech in Mechanical Engineering and Dual Minor in Computer Science and Machine Learning. My interests span computer vision, 3D reconstruction, and efficient ML systems.



## EDUCATION

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### Indian Institute of Technology, Bombay

2021 - 2025

B.Tech in Mechanical Engineering | Minor in Computer Science and Data Science

Major CPI: 8.82/10 · Minor CPI: 10/10

- **Team Lead, Inter IIT Tech Meet 13.0**

Dec 2024

Led team of 13 for Adobe deepfake detection challenge to 2nd runner up in task 2

- **Teaching Assistant**

Apr - Jun 2023

PH 112 & MA 108 | Conducting weekly tutorials and grading assignments for 40+ students

- **Machine Learning Mentor**

May - Jul 2023

Mentoring 7 students during the summers to pick up pace in ML

- **Core Team Member, DAV**

Jul 2022 - Apr 2023

Data Analytics Team of the Undergrad Academic Council

- **Web Coordinator**

May 2022 - Jun 2023

Developed websites for SARC events and alumni portals

### Aalto University, Finland

Jan - Jun 2025

Semester Exchange, School of Science

Ranked 3/380+ in Programming Parallel Computers Course

[Letter of Recommendation](#)

CPI: 10.0/10.0

## EXPERIENCE

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### Sprinklr

Gurugram, India

- **Voice Hackathon Winner**

Jan 2026

Won 1st prize in company wide voice hackathon. Our team built an end to end voice agent prototype with real time multi-turn conversation handling and tool calling capabilities, competing against 20+ teams.

- **Machine Learning Engineer** Aug 2025 - Present  
Building real time voice bot infrastructure. Optimizing STT pipelines with vLLM and with custom scheduler for priority based request routing. Working on end to end voice bots for conversational AI and their deployment pipelines.
- **Product Intern** May - Jul 2024  
Benchmarked audio codecs for use in voice agent pipelines. Built a unified voice bot prototype for ASR and TTS applications achieving WER 8.9%, ~300ms latency. Received pre placement offer (PPO).

**Aalto Vision Lab** Helsinki, Finland

*Research Assistant under Matias Turkulainen and Juho Kannala* Jan - Jul 2025

Wrote multi GPU training scripts for feedforward gaussian splatting on SLURM clusters. Profiled and optimized training kernels for better GPU utilization. Benchmarked and ablated various optimization techniques for feedforward gaussian splatting.

**Technical University of Munich** Munich, Germany

*Summer Research Intern | Quadruped Robotics under Hongpeng Cao and Marco Caccamo* Jun - Jul 2023

Developed system identification models for quadruped robot dynamics. Implemented MPC based control and compared against model free deep RL approaches in simulation.

**Hexo AI** Remote

*ML Intern | Diffusion Models* Feb - Apr 2023

Built a text conditional latent diffusion model for image generation. Worked on image inpainting with textual conditioning in a team of 3.

**64Squares** Remote

*ML Intern | Contextual Chatbots* Dec 2022 - Jan 2023

Trained BERT and spaCy models with DIET classifier for intent and entity extraction. Stress tested chatbot models for stability.

## PROJECTS

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**ThinkMesh** | [code](#) (GitHub ⭐ 274) Sep 2025

Parallel reasoning framework for LLMs implementing [Self-Consistency](#), [Debate](#), [Tree of Thoughts](#), and [Graph of Thoughts](#) strategies with configurable compute budgets.

**Gaussian Masked Autoencoders** | [code](#) Feb - Mar 2025

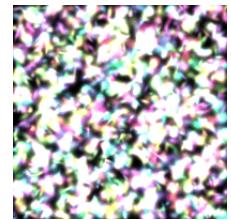
Replicated gaussian MAE paper using 3D Gaussian splats as intermediate latent representation, enabling zero-shot capabilities.



## Minimal 2D Gaussian Splatting | [code](#)

Dec 2024

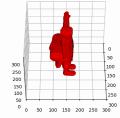
Implementation of gaussian splatting for 2D images using tile-based differential rasterization with custom Triton kernels.



## Multi-View Reconstruction | [code](#) | [report](#)

Sep - Nov 2024

3D reconstruction from images using volumetric graph cuts on visual hulls followed by ray casting for shading.

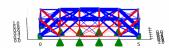


## Structural Optimization | [code](#) | [report](#)

Jan - Apr 2024

Gradient-based optimization framework using matrix formulation to compute optimal spatial configuration of structures under loading.

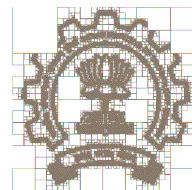
Loss: 301.9835



## Fractal Curves for Tool Path Planning | [code](#) | [report](#)

Aug - Nov 2023

Fractal curve algorithms for tool path planning in layered 3D printing with recursive decomposition.



## PUBLICATIONS

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### COVID-19 Self diagnosis classification using BERT and LightGBM models: Shayona Jul'23

R Chavda, **Darshan Makwana**, et al. Accepted at SMM4H 2023 (Social Media Mining for Health Applications)