

# Chinmay Joshi

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## Education

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### Universität des Saarlandes

Saarbrücken, Germany

*M.Sc. Computer Science (Grade: 1.7)*

- Master’s Thesis: **On the Effect of Data Pruning on Memorization.**

*Advisor: Dr. Rebekka Burkholz, CISPA Helmholtz Center for Information Security.*

Studied how dynamic data pruning changes memorization dynamics in deep networks and affects membership-inference vulnerability. Proposed WLIB, an InfoBatch-based pruning variant that reduced membership-inference risk by 26% on ImageNet with negligible accuracy and compute cost.

- Recipient of the **SaarlandStipendium** and **Santander Scholarship**.

### Narsee Monjee Institute of Management Studies

Mumbai, India

*B.Tech. in Data Science (GPA: 3.8/4)*

## Publications

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- **Chinmay Joshi**, Advait Gadhikar, Celia Rubio-Madrigal, Aneet Kumar Dutta, Mridula Singh, and Rebekka Burkholz. "Prune to Protect: Faster Training and Enhanced Privacy by Dynamic Data Pruning." Accepted at **ICML 2026 Workshop** on Memorization in Foundation Models (MemFM). Under review at **NeurIPS 2026**.
- **Chinmay Joshi** and Siba Panda. "PCA-LSTM: Deep Learning Approach for the Indian Large-Caps." 2022 IEEE 7th International Conference for Convergence in Technology (I2CT).

## Experience

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### Research Assistant

Dec 2025 – Present

*Deutsches Forschungszentrum für Künstliche Intelligenz (DFKI)*

*Kaiserslautern, Germany*

- Developing an **interpretable subgroup-discovery method for temporal economic data**, mining rule-based descriptions of when and where distinct subpopulations emerge. The preliminary pipeline identifies candidate groups through temporal feature construction and clustering, then ranks them by distributional divergence and expresses them as human-readable tree-based rules.

### Research Assistant

Mar 2025 – Sep 2025

*Fraunhofer IZFP, Project [Urbanist](#)*

*Saarbrücken, Germany*

- Collected and **processed data streams from mobile and stationary environmental sensor stations**, computing exposure metrics such as UV index and noise levels from aggregated sensor readings.
- Built **geospatial visualizations** using OpenStreetMap, Folium, and Geopandas to assess route quality and geodata accuracy for an urban mobility application.

### Research Intern

Apr 2024 – Aug 2024

*National Institute of Informatics (NII)*

*Tokyo, Japan*

- Constructed a **synthetic dataset** of over 150,000 renderings using Blender and Objaverse, covering 12 viewpoints and 5 HDR illumination environments per object, with paired depth and surface-normal maps, to supervise joint novel-view synthesis and relighting from a single image.
- **Fine-tuned a pretrained latent diffusion model** to jointly **synthesize novel views and relight objects from a single input image** conditioning on source illumination and viewpoint; analyzed failure modes in disentangling geometry, appearance, and illumination from a single observation.

### Research Assistant

Aug 2023 – Mar 2024

*Fraunhofer IZFP, Project [SmartPigHome](#)*

*Saarbrücken, Germany*

- Supported **computer vision experiments** for livestock monitoring, including object detection and motion-based video analysis from camera feeds.
- Developed an **audio annotation tool** for veterinary recordings that replaced a manual paper-based workflow, reducing annotation time by up to 80%.

## Research Assistant

DFKI, Project *KIMonoS*

Jun 2023 – Mar 2024

Saarbrücken, Germany

- Designed a **scheduling algorithm for dynamic multi-vehicle shuttle routing** and evaluated its behavior under varying passenger demand through large-scale traffic simulations using SUMO.

## Computer Vision Intern

Aurify Systems Pvt. Ltd.

Jan 2022 – Apr 2022

Mumbai, India

- Developed end-to-end **machine vision pipelines for retail and warehouse environments**, covering product detection, empty-shelf monitoring, and CCTV-based activity analysis, deployed under resource constraints using CNN-based detection pipelines.
- Built a human **pose-based activity recognition system** using a two-stage pipeline of pose estimation and SVM classification for real-time suspicious-activity detection, achieving 91% accuracy in field evaluations.

## Projects

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- **Hierarchical VAE for Image Compression.** Implemented a **hierarchical extension of a VAE-based image-compression model**, improving reconstruction quality by approximately 5 dB PSNR over JPEG at comparable bitrates through architectural modifications ([report](#)).
- **Bird Call Recognition.** Built an end-to-end **audio classification pipeline to identify bird species** from field recordings, applying MFCC feature extraction to isolate call signals from noisy environmental captures, and training a CNN classifier on the resulting spectral representations; attaining 82% test accuracy.

## Skills

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**Research Areas.** Data Pruning, Memorization, ML Privacy, Training Dynamics, Interpretable Pattern Discovery, Sparse Neural Networks, Computer Vision (2D & 3D), Time-Series Modeling

**Frameworks.** PyTorch, Hugging Face Transformers, Diffusers, scikit-learn, Keras

**Programming.** Python, SQL, R, LaTeX

**Research Infrastructure.** SLURM, Multi-GPU and Distributed Training, Weights & Biases, Git, Docker

**Data and Simulation.** Blender, SUMO, OpenStreetMap, Tableau

**Languages.** English, Hindi, Marathi, German (A2, progressing toward B1)

## Relevant Coursework

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High-Level Computer Vision (1.3); Pruning Deep Neural Networks for Lottery Tickets, seminar (1.3); Topics in Algorithmic Data Analysis (1.7); Image Acquisition Methods (1.7); Computer Vision and ML for Computer Graphics, seminar (1.7); Advanced Image Analysis (2.0); Image Processing and Computer Vision (2.3).

## Student Leadership

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- **Executive Member, Students' Council**, Colloquium (Management Cell), NMIMS *Aug 2018 – Jul 2019*  
Organized student events on management, finance, and entrepreneurship.
- **Sub-head of Photography**, Social Conclave, NMIMS *Jan 2020*  
Led the photography team for covering a student forum on social and economic issues.

## Volunteering

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- **Teaching Volunteer**, The Satsang Foundation. Tutored students from the tribal community of Aarey Colony, Mumbai, in Physics, Mathematics, and English.
- **COVID-19 Relief Volunteer**, The Satsang Foundation. Supported food distribution for economically affected communities during the pandemic.