

SAHIL GOYAL

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 Scholar  GitHub  LinkedIn  Medium

EDUCATION

Indian Institute of Technology Roorkee

2019 - 2024

B.S.+M.S. in Applied Mathematics

Department Rank 1 (Gold Medal)

Overall GPA: **9.44**/10

TECHNICAL SKILLS

Languages and Core Frameworks: Python, C++, JAX (Flax, Optax, Orbx, Chex), PyTorch

PUBLICATIONS

1. **ELT: Elastic Looped Transformers for Visual Generation.** [\[Paper\]](#)
Sahil Goyal*, Swayam Agrawal*, Gautham Anil, Prateek Jain, Sujoy Paul, Aditya Kusupati [\[ECCV '26\]](#)
2. **MaGNeTS: Masked Generative Nested Transformers with Decode Time Scaling.** [\[Paper\]](#) [\[Poster\]](#)
Sahil Goyal*, Debapriya Tula*, Gagan Jain, Pradeep Shenoy, Prateek Jain, Sujoy Paul [\[ICML '25\]](#)
3. **Design-o-meter: Towards Evaluating and Refining Graphic Designs.** [\[Paper\]](#) [\[Poster\]](#) [\[Survey\]](#)
Sahil Goyal*, Abhinav Mahajan*, Swasti Mishra, Prateeksha Udhayan, Tripti Shukla, K J Joseph, Balaji Vasanth Srinivasan. [\[WACV '25\]](#)
4. **Emotionally Enhanced Talking Face Generation.** [\[Paper\]](#) [\[Poster\]](#) [\[Code\]](#)
Sahil Goyal, Shagun Uppal, Sarthak Bhagat, Yi Yu, Yifang Yin, Rajiv Ratn Shah. [\[ICCV-W '23\]](#) [\[ACM MM-W '23\]](#)
5. **Emotional talking faces: Making videos more expressive and realistic.** [\[Paper\]](#) [\[Demo\]](#)
Sahil Goyal, Shagun Uppal, Sarthak Bhagat, Dhroov Goel, Sakshat Mali, Yi Yu, Yifang Yin, Rajiv Ratn Shah. [\[ACM MM Asia '22\]](#) [\[Best Demo paper\]](#)

EXPERIENCE

Pre-Doctoral Researcher at Google DeepMind

June 2024 - July 2026

Advisors: *Dr. Prateek Jain, Dr. Sujoy Paul, Dr. Aditya Kusupati*

- Research in **Efficient ML** (*training-time compute and inference-time compute efficiency, parameter efficiency*).
- Contributions to **Veo** (*model distillation, adaptive compute*) and **Gemini** (*model pruning, distillation, pre-training, efficient video tokenization*).
- Publications at ECCV [\[1\]](#) and ICML [\[2\]](#), 2 Patents on Efficient Visual Generation.

Research Intern at Adobe Research

May 2023 - July 2023

Advisors: *Dr. Joseph KJ, Dr. Balaji Vasanth Srinivasan*

- Developed unified framework [\[3\]](#) for automated design evaluation and refinement
- Enabling iterative improvements for creators on **Adobe Express**.

Research Intern at MIDAS Lab @IITD

Sep 2021 - Jan 2023

Advisors: *Dr. Rajiv Ratn Shah*

- Multimodal talking face generation network [\[4, 5\]](#), winning **Best Demo Paper** award at ACM MM Asia.

Machine Learning Intern at PANDO

March 2021 - April 2021

- Developed a **20x** faster 3-D space optimization algorithm for transport logistics.

KEY RESEARCH PROJECTS

- Elastic Looped Transformers for Visual Generation (ECCV [1])

Oct 2025 - April 2026

 - Improved discrete and continuous diffusion models with **4x** less parameters (FID of **2.0** using just **~100M** params).
 - Developed novel **Intra-Loop Self-Distillation**, enabling **Elastic Inference** and dynamic compute scaling.
 - Achieved **3.5x** inference throughput and **~35%** lower peak HBM compared to standard transformer baselines.
- Compression of Pre-trained LLMs (Gemini)

April 2025 - July 2026

 - Optimized **model compression** pipeline for **Gemini**, aiming for **minimal extra training cost**.
 - Built novel and effective **structured-pruning** and **layer-wise distillation** techniques.
 - This involved **pre-training**, **finetuning** and **evaluation** of Gemini models across multiple scale tiers.
 - Results show significant quality gains over iso-params and iso-FLOPs baselines.
- Adaptive Compute for Visual Generation (Veo, ICML [2])

June 2024 - March 2025

 - Developed an **adaptive computation** method [2] for multi-step generative models using **nested transformers**.
 - Achieved **~3x** reduction in inference FLOPs for image/video generation.
 - Implemented similar efficient techniques for Google’s SOTA video generation model **Veo**.
 - Executed **end-to-end training**, **distillation** and **evaluation** of **Veo** models.
- Automated Evaluation and Refinement of Graphic Designs (WACV [3])

May 2023 - July 2023

 - Built compact **Siamese** networks (**0.5M** params) to score **Graphic Designs**.
 - Significantly outperformed GPT-4o and LLaVA-NeXT (7B) in ranking graphic designs.
 - Tailored advanced **Genetic Algorithms** for SOTA **Layout refinement** (mean-IOU of **0.54** on Crello dataset).
- Emotionally Enhanced Talking Face Generation (ICCV-W [4], Best Demo paper [5])

Sep 2021 - Jan 2023

 - Developed the first **talking face generation** network [4, 5] that incorporated emotions.
 - SOTA results on **CREMA-D** dataset (**83.2%** emotion classification accuracy and **FID** metric: **5.29**).
 - Deployed the entire system as an interactive web interface.

SELECTED ACHIEVEMENTS

- PhD admits** from UT Austin, EPFL, MILA, ELLIS (Declined).2026
- 2 Patents** filed at US Patent Office on Efficient Visual Generation [Patent 1].2025
- Among **15**, from 18,000+ applicants, selected for Google’s Pre-Doctoral Researcher Program.2024
- Department Gold Medal** (IIT Roorkee - Applied Mathematics).2024
- Best Demo Paper** at ACM MM ASIA conference.2022
- Gold Medal** at Inter IIT Tech Meet.2022
- Open Source:** **PyTorch-Vision** (debugged dataloaders, ported tests and updated docs).2022
- Awarded ACM SigMM student travel grant for ACM MM Asia.2022
- JEE Advanced Rank of **1583** among 1.5M students.2019
- 600+** stars on  **GitHub**.

POSITIONS OF RESPONSIBILITY

- Reviewer** at NeurIPS, ICML, ICLR, CVPR, ECCV, ICCV, AAMAS, WACV conferences.2024 - Present
- Mentor** at **Data Science Group IITR**2020 - 2024
- Undergraduate Teaching Assistant** at Academic Reinforcement Program IITR2021