

# Aryan Garg

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## TECHNICAL SKILLS

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**Programming:** Python, C++, CUDA

**Frameworks & Tools:** PyTorch, OpenCV, Git, Docker, Hugging Face, XET, Google Cloud

**Large Scale Training:** DeepSpeed, FSDP, DDP, LoRA, DreamBooth

**Computer Vision & Gen AI:** Diffusion, Transformers, Image Editing, Text-to-Image, Text-to-Video, 3D Gaussian Splatting.

## EXPERIENCE

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### Research Assistant

Jan. 2025 – Present

*WISION Lab, UW-Madison (Advisor: Prof. Mohit Gupta)*

*Madison, WI*

- gQIR (CVPR): Increased visual fidelity of SPAD ISPs by 43% over traditional methods by large scale domain adaptation using synthetic data of Stable Diffusion's VAE and LoRA Adversarial Distillation (1 step) of the Latent Denosing U-Net.
- gQIR (CVPR): Extended Stable Diffusion to a text-to-video prior via flow-based warping and motion compensation to ensure temporal stability.
- Radiance Fields From Photons (SIGGRAPH): 3D Gaussian Splatting for single photon cameras, achieving real-time rendering

### Research Intern

Jun. 2024 – Aug. 2024

*Aalto University (Advisor: Prof. Antti Oulasvirta)*

*Helsinki, Finland*

- Integrated text, segmentation and saliency maps into the Stable Diffusion U-Net via a Dual Adapter: Zero-Encoder and Cross-Attention. Reducing training overhead by ~50% compared to a multi-ControlNet setup.

### Research Assistant

Jun. 2023 – Apr. 2024

*Computational Imaging Lab, IIT Madras (Advisor: Prof. Kaushik Mitra)*

*Chennai, India*

- HDRSplat (BMVC): Architected a real-time 3D Gaussian Splatting pipeline using RAW DNGs to bypass legacy/proprietary ISPs and achieving HDR renderings while maintaining 60 FPS on consumer GPUs
- IP-FaceDiff (WACV): Lifted a Text-to-Image prior to text-to-video for facial editing with ArcFace Identity Preservation.
- dpLFVR (ICCP): Dual pixels for light field videos using convolution transformers for consumer mobile 3D video experiences.

### MITACS Research Intern

Jun. 2022 – Sep. 2022

*LVSN (Advisors: Jean-Francois Lalonde, Yannick Hold Geoffroy)*

*Quebec, Canada*

- Finetuned existing GAN-based image-to-image baselines (Pix2Pix, SPADE) to generate high dynamic range skies.

## CURRENT PROJECT

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**Adapting Flux 2 Klein for Controllable HDR Synthesis and Editing.** Implementing a LoRA adapted DiT for HDR generation and Semantic map + prompt based dynamic range expansion control axis.

Goal: Push the boundaries of T2I models for high-fidelity, semantically controllable HDR image editing.

## SELECTED PROJECTS

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**gQIR** [📄★3] *CVPR 2026* | Stable Diffusion from Photons. Domain adaptation to SPADs and prior lifting to burst input.

**HDRSplat** [📄★44] *BMVC 2024* | 3D Gaussian Splatting from raw images for real-time 3D HDR reconstructions

**IP-FaceDiff** *WACV 2025* | 80% less time Text-to-Video facial editing with identity preservation over multiple edits.

## PUBLICATIONS

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6 first-author and 10+ papers at top-tier vision/AI venues: IEEE/CVF CVPR, ACM SIGGRAPH, ICLR, BMVC, WACV

## HONORS & AWARDS

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**2025** – UW-Madison, CS Department Summer Research Fellowship Award

**2025** – Qualcomm Innovation Fellowship - North America finalist (Out of 266 teams)

**2023** – Awarded Bosch AI Fellowship (RBCDSAI) at IIT Madras

**2019** – JEE Mains Rank: 1834 among 1.1 million students. JEE Advanced Rank: 5137 for IIT selection.

## EDUCATION

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**University of Wisconsin-Madison**

Madison, USA

*Ph.D. in Computer Sciences*

*May. 2026 – Current*

**University of Wisconsin-Madison**

Madison, USA

*M.S. in Computer Sciences*

*Sep. 2024 – May. 2026*

**Indian Institute of Technology, Mandi**

Mandi, India

*B.Tech. in Computer Sciences and Engineering*

*Aug. 2019 – May 2023*