

# Aashish Rai

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## EDUCATION

- **Brown University** Providence, RI, USA  
Fall 2023 - 2028 (expected)
  - *Doctor of Philosophy (PhD), Computer Science,*  
Advisor: Srinath Sridhar
- **National Institute of Technology** Surat, India  
Aug 2017 - June 2021
  - *Bachelor of Technology (B.Tech), ECE,*

## RESEARCH EXPERIENCE

- **Brown University** Providence, RI, USA  
Aug 2023 - Present
  - **PhD Research Assistant**, (*Advisor: Srinath Sridhar*)
    - Building a 4D reconstruction pipeline and a foundation world model for sparse-view 4D scene reconstruction.
    - A novel 2D representation (UVGS) to solve permutation invariance and unstructured nature of 3D Gaussian Splatting.
    - UVGS enables the application of existing 2D image models (VAEs, diffusion models) on generating Gaussian Splatting assets directly.
    - A method to generate semantically aligned and synchronized audio tracks for silent egocentric videos using diffusion models.
- **Meta Reality Labs** Burlingame, CA, USA  
May 2024 - Dec 2024
  - **Researcher/Intern**, (*Hosted by: Aayush Prakash*)
    - Proposed a novel 2D representation to solve permutation invariance and unstructured nature of 3D Gaussian Splatting primitives.
    - The new representation enables the application of existing 2D image based models on Gaussian Splatting directly.
- **Robotics Institute, Carnegie Mellon University** Pittsburgh, PA, USA  
Sept 2021 - May 2023
  - **Research Assistant** (*Advisor: Fernando De la Torre*)
    - (in collaboration with **Meta Reality Labs**)
    - [Project 2:] - A novel framework to generate realistic 3D Faces by leveraging 2D generative face models. Demonstrated its application in semantic face manipulations and text-based editing in 3D faces.
    - Outperformed SOTA in 3D shape reconstruction and preserving the identity of rendered faces.
    - [Project 1:] - A 3D face generative model to decouple identity and expression and get granular control over expressions and identity.
- **McGill University** Montreal, Canada / Online  
May 2020 - Mar 2021
  - **Research Intern** (*Advisor: Jeremy Cooperstock*)
    - Improved Semantic Face Editing by manipulating the latent space of StyleGAN2.
    - Proposed an automated way of disentangling one feature from the other in the latent space by taking orthogonal projection.
    - Used multi-class SVM classifier for complex attributes like race, face shape, etc.
- **Norwegian Biometrics Laboratory, NTNU** Norway / Online  
Dec 2019 - May 2020
  - **Undergraduate Researcher** (*Advisor: Kishor Upla, Christoph Busch*)
    - Designed an efficient face super-resolution model using progressive residual CNN network.
    - Proposed a three module framework to generate 8x images from 8x8, 16x16, 24x24 low resolution images.
    - The model outperformed on benchmark datasets CelebA (PSNR: 26.55) and LFW (PSNR: 26.26).

## PUBLICATIONS

- **Aashish Rai**, Angela Xing, Anushka Agarwal, Xiaoyan Cong, Zekun Li, Tao Lu, Srinath Sridhar, "PackUV: Packed Gaussian UV Maps for 4D Volumetric Video", 2025.
- **Aashish Rai**, Dilin Wang, Mihir Jain, Nikolaos Sarafianos, Arthur Chen, Srinath Sridhar, Aayush Prakash, "UVGS: Reimagining Unstructured 3D Gaussian Splatting using UV Mapping", CVPR 2025. [\[Link\]](#)
- **Aashish Rai**, Srinath Sridhar, "EgoSonics: Generating Synchronized Audio for Silent Egocentric Videos", IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2025. [\[Link\]](#)
- **Aashish Rai**, Hiresh Gupta, Ayush Pandey, Francisco Vicente Carrasco, Shingo Jason Takagi, Amaury Aubel, Dael Kim, Aayush Prakash, Fernando de la Torre, "Towards Realistic Generative 3D Face Models", WACV 2024. [\[Link\]](#)
- Fariborz Teherkhani, **Aashish Rai**, Shaunik Srivastava, Quankai Gao, Xuanbai Chen, Fernando de la Torre, Steven Song, Aayush Prakash, Daeil Kim, "Controllable 3D Generative Adversarial Face Model via Disentangling Shape and Appearance", WACV 2023. [\[Link\]](#)

- **Aashish Rai**, Clara Ducher and Jeremy Cooperstock, "*Improved Attribute Manipulation in the Latent Space of StyleGAN for Semantic Face Editing*," 20<sup>th</sup> IEEE ICMLA 2021, Pasadena, CA, USA. [\[Link\]](#)
- **Aashish Rai**, Vishal Chudasama, Kishor Upla, Kiran Raja, Raghavendra Ramachandra and Christoph Busch, "*Com-SupResNet: A Compact Super-Resolution Network for Low-Resolution Face Images*," 2020 8th International Workshop on Biometrics and Forensics (IWBF), Porto, Portugal, 2020, pp. 1-6. [\[Link\]](#)  
(Extended version is accepted in IEEE Transactions on Biometrics (T-BIOM))