Aashish Rai

Providence, RI 02912

✉ aashish@brown.edu   •   🖥 aashishrai3799.github.io

EDUCATION

Brown University   **Providence, RI, USA**
Doctor of Philosophy (PhD), Computer Science,   *Fall 2023 - 2028 (expected)*
Advisor: Srinath Sridhar

National Institute of Technology   **Surat, India**
Bachelor of Technology (B.Tech), ECE,   *Aug 2017 - June 2021*

RESEARCH EXPERIENCE

Meta Reality Labs   **Burlingame, CA, USA**
Researcher/CW, (Hosted by: Aayush Prakash)   *May 2024 - Dec 2024*

- Proposed a novel 2D representation for 3D Gaussian Splatting to solve permutation invariance and unstructured nature of 3DGS primitives.
- The new representation enables the application of existing 2D image based models (autoencoder, diffusion models, etc.) on Gaussian Splatting directly.

Robotics Institute, Carnegie Mellon University   **Pittsburgh, PA, USA**
Research Assistant (Advisor: Fernando De la Torre)   *Sept 2021 - May 2023*

(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**
Research Intern (Advisor: Jeremy Cooperstock)   *May 2020 - Mar 2021*

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**
Undergraduate Researcher (Advisor: Kishor Upla, Christoph Busch)   *Dec 2019 - May 2020*

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).

Indian Space Research Organization (ISRO)   **Dehradun, India**
Summer Intern (Advisor: Anil Kumar)   *May 2019 - July 2019*

- Implemented computationally efficient algorithms for classification of Panchromatic and Multispectral satellite images using CNN.

Machine Learning and Computer Vision (ML-CV) Lab, SVNIT   **Surat, India**
Undergraduate Researcher (Advisor: Kishor Upla)   *Jan 2019 - Nov 2019*

- A face recognition model for an unconstrained environment using CNN and transfer learning.

PUBLICATIONS/SUBMISSIONS

- **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"*, (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**, Shaunak Srivastava, Quankai Gao, Xuanbai Chen, Fernando de la Torre, Steven Song, Aayush Prakash, Dael Kim, *"Controllable 3D Generative Adversarial Face Model via Disentangling Shape and Appearance"*, (WACV 2023). [**Link**]

- **Aashish Rai**, C. Ducher and Jeremy. Cooperstock, *"Improved Attribute Manipulation in the Latent Space of StyleGAN for Semantic Face Editing,"* 20th IEEE International Conference on Machine Learning and Applications (ICMLA), 2021, Pasadena, CA, USA [**Link**]

- **Aashish Rai**, V. Chudasama, Kishor Upla, K. Raja, R. Ramachandra and Christoph Busch, *"ComSupResNet: 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))