Aashish Rai

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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

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 face generative 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.

Research Papers

○ **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"*, (2023, Arxiv). [**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, 2022. [**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))

○ **Aashish Rai**, R. Karnani, V. Chudasama and K. Upla, *"An End-to-End Real-Time Face Identification and Attendance System using CNN,"* 2019 IEEE 16th International Conference (INDICON), Rajkot, India, 2019. [**Link**]

Awards and Achievements

- Scholarship for Global Talent Internship Program 2020 by the Ministry of Science and Technology, Taiwan.
- Bronze medal - Machine Learning competition, University of Liverpool.
- Merit-based scholarship for undergraduate tuition for two consecutive years from the State Government.
- Nominated for best paper, IWBF 2020
- Top 1% Flipkart GRiD 2.0 - SD Challenge.
- Qualified for onsite regionals of Smart Gujarat For New India Hackathon 2019-20.
- Nominated for best paper, INDICON