

# 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

- **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 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**  
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).
- **Indian Space Research Organization (ISRO)** **Dehradun, India**  
May 2019 - July 2019  
**Summer Intern** (Advisor: Anil Kumar)  
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**  
Jan 2019 - Nov 2019  
**Undergraduate Researcher** (Advisor: Kishor Upla)  
A face recognition model for an unconstrained environment using CNN and transfer learning.

## Research Papers

- **Aashish Rai**, Hires 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," 20<sup>th</sup> 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

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- 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