

# Adrish Dey

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Education: **Netaji Subhash Engineering College (NSEC)** July 2017 - September 2021  
Bachelors of Technology in Computer Science and Engineering (with Honors)  
Kolkata, India

Research Interests: Geometric Deep Learning, Topological Data Analysis, Generative Models, Implicit Models

Accepted Publications: • **(Spotlight)** Topo Sampler: A Topology Constrained Noise Sampling for GANs; **Adrish Dey\***, Sayantan Das; NeurIPS 2020 Workshop on Topological Data Analysis and Beyond

Research Presentations: • **(Spotlight Talk)** Topo Sampler: A Topology Constrained Noise Sampling for GANs; To appear at NeurIPS 2020 Workshop on Topological Data Analysis and Beyond

Research Service: • Reviewer at ICLR 2021 Workshop on Geometry and Topology in Representation Learning

Research Experience: **Bachelors Thesis** February 2021 - Present  
**Title:** Discrete Non-Euclidean Convolutions: Signal Processing and Random Walk on Simplicial Complexes  
**Mentored By:** *Dr Bastian Rieck (ETH Zurich), Prof. Shilpi Bose (NSEC)*

**Massachusetts Institute of Technology (MIT) | CSAIL** July 2021 - August 2021  
**Mentored By:** *Prof. Justin Solomon (MIT)*

- **Summer Geometry Institute Fellow**, Geometric Data Processing Group

**Independent Research | Remote** September 2020 - October 2020  
**Mentored By:** *Dr Bastian Rieck (ETH Zurich)*

- Studied Disconnected Manifold Learning in GANs, using Persistent Homology.
- Implemented Experiments, Authored a NeurIPS Workshop Submission.

**Opaltech.ai | Remote** May 2020 - August 2020  
**Mentored By:** *Dr. Shahrouz Ryan Alimo (NASA Jet Propulsion Lab)*

- Researched and Implemented a RGBD SLAM based 3D Scene Reconstruction Framework.
- Implemented a Ray Tracing based Simulator for Synthetic data Generation

**Rephrase.ai | Bangalore, Karnataka, India** December 2019 - February 2020

- Designed a data pre-processing unit, for stream lining audio-splitting / filter-bank generation.
- Researched and Implemented a sparsity-optimized version of a hessian-free second-order optimizer.
- Contributed to GAN driven domain translation of face expressions.

Open Source: **Google Summer of Code (TensorFlow)** May 2019 - August 2019  
**Mentored By:** Sachin Joglekar (Google), Vojtech Bardiovsky (Google)

- Implemented ESRGAN (<https://arxiv.org/abs/1809.00219>) and published the trained model to TensorFlow Hub: <https://tfhub.dev/captain-pool/esrgan-tf2/1> (**OVER 2K+ Downloads**)
- Implemented GAN Distillation Framework for ESRGAN generator. Achieved **~628x compression factor** with minimal drop in reconstruction quality. Capable of running **near-real-time** video frame super resolution on Pixel 3 CPU ([https://github.com/captain-pool/GSOC/tree/master/E3\\_Streamers](https://github.com/captain-pool/GSOC/tree/master/E3_Streamers))
- Added Support for displaying AutoGraphed tf.functions, with TensorFlow saved\_model\_cli (<https://github.com/tensorflow/tensorflow/pull/30752>)