

# ADRISH DEY

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## RESEARCH INTERESTS

Geometry Processing, Optimal Transport, Geometric Deep Learning, Topological Data Analysis

EDUCATION **Boston University** 09/2022 - present

*Advisor: Prof. Edward Chien*

Doctor of Philosophy (Ph.D.) in Computer Science (Department Chair's Fellow)

**Netaji Subhash Engineering College – GPA 8.1 / 10.0** 07/2017 - 07/2021

*Affiliation of Maulana Abul Kalam Azad University of Technology, West Bengal*

Bachelor of Technology (B.Tech) in Computer Science and Engineering.

PUBLICATION *Topo Sampler: A Topology Constrained Noise Sampling for GANs*

**Adrish Dey\*** and Sayantan Das\*

Neural Information Processing Systems (NeurIPS) 2020 – Workshop on Topological Data Analysis and Beyond. **Spotlight Presentation.**

PREPRINT *Riemannian Functional Map Synchronization for Probabilistic Partial Correspondence in Shape Networks*

Faria Huq, **Adrish Dey**, Sahra Yusuf, Dena Bazazian, Tolga Birdal and Nina Miolane  
ArXiv: [2111.14762](https://arxiv.org/abs/2111.14762) [[cs.CV](#), [cs.GR](#)]

EXPERIENCES **Weights & Biases (via Remote Infosystems)** 11/2021 - 08/2022

MACHINE LEARNING ENGINEER – GROWTH TEAM

1. Developing and maintaining integrations of Weights and Biases with other machine learning platforms.
2. Reimplementing research papers and writing reports about them.

**Massachusetts Institute of Technology** 07/2021 - 08/2021

SUMMER GEOMETRY INSTITUTE (SGI) RESEARCH FELLOW

1. Implemented an [OpenFlipper](#) extension for optimizing folded-over quad-meshes via locally injective maps (with Prof. David Bommes, University of Bern)
2. Explored continuous label switching in Bayesian Rotation Synchronization Problem (with David R. Palmer, MIT)
3. Implemented proof-of-concept experiments for a novel Riemannian gradient descent based approach to alleviate continuous label switching (with David R. Palmer, MIT) [[Link to Research Blog](#)]
4. Exploring Anisotropic Schrödinger Bridges on discrete manifolds. (with Prof. Justin Solomon, MIT)

**Bachelor's Thesis** 04/2021 - 07/2021

*Title: "Discrete Non-Euclidean Convolutions: Signal Processing and Random Walk on Simplicial Complexes"*

*Advisors:* Dr. Bastian Alexander Rieck (ETH Zürich, currently Technische Universität München, Germany); Prof. Silpi Bose (Netaji Subhash Engineering College, Kolkata)  
*Contributions:* Explored a novel diffusion learning method for simplicial message passing neural networks.

**Independent Research** 08/2020 - 10/2020  
*Mentored By:* Dr. Bastian Alexander Rieck, ETH Zürich

1. Studied Disconnected Manifold Learning in GANs, using Persistent Homology.
2. Implemented Experiments and co-authored a NeurIPS Workshop Submission. [[Link to Report](#)]

**Rephrase.ai** 12/2019 - 02/2020  
RESEARCH INTERN

1. Designed a data pre-processing unit, for stream lining audio-splitting / filter-bank generation.
2. Explored and implemented a sparsity-optimized version of a hessian-free second-order optimizer.
3. Contributed to Generative Adversarial Network (GAN) driven domain translation of face expressions.

**Google** 05/2019 - 08/2019  
GOOGLE SUMMER OF CODE STUDENT – TENSORFLOW

1. Implemented Enhanced Super Resolution Generative Adversarial Network (ESR-GAN) and published the trained model to TensorFlow Hub. [[Link to Github](#)] [[Link to Pretrained Model](#)] (2K+ **downloads**)
2. 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. [[Link to Github](#)]
3. Added Support for displaying AutoGraphed tf.functions, with TensorFlow `saved_model_cli`. [[Link to Github](#)]

#### OPEN SOURCE CONTRIBUTIONS

[Geomstats](#), [TensorFlow Datasets](#), [TensorFlow Hub](#), [TensorFlow](#)

#### SERVICE

[2022 - 2022] Reviewer – ICLR 2022 Workshop on Geometric and Topological Representation Learning. [[Website](#)]

[2021 - 2021] Reviewer – ICLR 2021 Workshop on Geometric and Topological Representation Learning. [[Website](#)]

[2019 - 2020] Mentor – Google Code-In 2019 (Mentoring high-school students around the world with open-source contributions to TensorFlow Ecosystem). [[Website](#)]

[2019 - 2020] Founder and President – Open Source Club and Linux User Group at Netaji Subhash Engineering College

[2018 - 2020] Technical Lead – Entrepreneurship and Development Cell at Netaji Subhash Engineering College (Funded by Ministry of Human Resources and Development, Government of India)

## HACKATHONS AND COMPETITIONS

- 2021 Stanford TreeHacks [[Link To Devpost](#)]
- 2020 COVID-19 Automation Anywhere Botathon [[Link To Devpost](#)]
- 2020 1789 OUT OF 10724 GLOBAL RANK – Google HashCode 2020
- 2020 SPECIAL MENTION – Techno India Group CodeTigers DECOV 2020 COVID-19 Hackathon
- 2019 2958 OUT OF 6640 GLOBAL RANK – Google HashCode 2019
- 2019 2<sup>nd</sup> POSITION. – Institutional Hackathon @ Calcutta Institute of Engineering and Management [[Link to Repository](#)]
- 2019 TOP 10 – HackInTheNorth; Institutional Hackathon @ IIIT Allahabad [[Link to DevFolio](#)]
- 2018 2<sup>nd</sup> POSITION – NASA SpaceApps Challenge Zonals
- 2018 Shortlisted for Finals – ACM Kolkata B.Tech Project Award [[Link to Website](#)]