

Darsh Kaushik

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EDUCATION

Université de Montréal MSc in Computer Science (supervised by Prof. Noam Aigerman)	Sep 2023 – Sep 2025 (Expected) GPA: 4.3/4.3
National Institute Of Technology (NIT), Silchar BTech in Computer Science And Engineering	Jul 2019 – May 2023 CGPA: 9.58/10

EXPERIENCE

Ubisoft La Forge <i>Research Developer Intern</i> <i>Neural Compression, Digital Avatars, Real-Time Rendering</i>	Feb 2025 – Present
<ul style="list-style-type: none">Working with the Character Animation team on neural compression techniques for real-time, high-fidelity facial animation playback in game engines.Developing shader-based neural decoders to enable memory-efficient, rig-free facial mesh deformations.	
Amazon <i>Applied Scientist Intern</i> <i>Graph Neural Networks, Representation Learning, Invalid Traffic</i>	Feb 2022 – Jul 2022
<ul style="list-style-type: none">Worked with the Traffic Quality team on learning task-agnostic representations using Graph Convolutional Networks to model ad-user interactions.Developed a novel unsupervised fake user detection algorithm by introducing a custom GraphSAGE loss for bipartite graphs, leading to a publication at Amazon Machine Learning Conference (AMLC).The GNN model combined with downstream clustering techniques successfully detected sophisticated click bots, generating 850M\$ revenue savings annually.	
Indian Space Research Organisation (ISRO) <i>Research Intern</i> <i>Computer Vision, Geospatial Big Data, Spatiotemporal Trends</i>	Jul 2021 – Nov 2021
<ul style="list-style-type: none">Worked with Dr. Santonu Goswami on characterizing long-term spatiotemporal trends of vegetation, hydrology and climate in permafrost regions.Developed machine learning based geospatial solutions to map permafrost degradation in the northern hemisphere at large spatial scales from remote sensing data.	
Indian Institute of Technology (IIT), Patna <i>Research Intern</i> <i>Natural Language Processing, Nature-inspired Algorithms</i>	May 2021 – Jul 2021
<ul style="list-style-type: none">Worked with Dr. Sriparna Saha on nature-inspired evolutionary algorithms for optimization to cluster textual data and generate long summaries.Used particle swarm optimized clustering for unsupervised extractive multi-document summarization, resulting in a publication at International Conference on Natural Language Processing (ICON).	

MANUSCRIPTS IN PREPARATION

- Paper on Shader-Embedded Neural Networks for Facial Animations**
(*expected submission to CVPR 2026*)
[Darsh Kaushik](#), Luiz Gustavo Hafemann, Noam Aigerman
- Paper on Learning Homeomorphic Flows on meshes**
(*expected submission to SIGGRPAH Asia 2025*)
[Darsh Kaushik](#), Noam Aigerman

PUBLICATIONS

- **COVID-19 Diagnosis from Cough Acoustics using ConvNets and Data Augmentation** [🔗](#)
First International Conference on Advances in Computing and Future Communication Technologies (ICACFCT)
Saranga Kingkor Mahanta, **Darsh Kaushik**, Hoang Van Truong, Shubham Jain, Koushik Guha. 2021.
- **Wikipedia Current Events Summarization using Particle Swarm Optimization** [🔗](#)
Proceedings of the 18th International Conference on Natural Language Processing (ICON)
Santosh Kumar Mishra, **Darsh Kaushik**, Sriparna Saha, Pushpak Bhattacharyya. 2021.
- **Improved English to Hindi Multimodal Neural Machine Translation** [🔗](#)
Proceedings of the 8th Workshop on Asian Translation (WAT2021), 155-160
SR Laskar, AFUR Khilji, **Darsh Kaushik**, P Pakray, S Bandyopadhyay. 2021.
- **CNLP-NITS@ LongSumm 2021: TextRank Variant for Generating Long Summaries** [🔗](#)
Proceedings of the Second Workshop on Scholarly Document Processing, 103-109
Darsh Kaushik, AFUR Khilji, U Sinha, P Pakray. 2021.
- **EnKhCorp1.0: An English-Khasi Corpus** [🔗](#)
Proceedings of the 4th Workshop on Technologies for MT of Low Resource Languages (LoResMT2021)
SR Laskar, AFUR Khilji, **Darsh Kaushik**, P Pakray, S Bandyopadhyay. 2021.

KEY PROJECTS

Flomeomorphisms | Learning Invertible Flows on 3D surfaces (Manuscript in preparation) **Mar 2024 – Jan 2025**
Neural Geometry Processing, 3D Shape Analysis, Bijective Fields

- The first **learning-based architecture for fast, accurate and bijective flows on 3D meshes** using vector field derived from harmonic functions.
- **Neural parameterization of a shape's Laplacian** unlocks the optimization of invertible flow trajectories to **learn surface maps and shape correspondences**.

ASyMov | Text-conditioned 3D Motion generation [🔗](#) **August 2022 – Mar 2023**
Multimodal Deep Learning, Latent Variable Models, 3D Computer Vision

- Guided research project on **text-conditioned 3D motion generation** with **Dr. Arjun Chandrasekaran**, then at the **Perceiving Systems** department, **Max Planck Institute for Intelligent Systems, Tübingen**.
- **Temporally discretized 3D motion sequences** to enhance human motion generation from textual prompts.

Cough It | Covid-19 diagnosis from Cough Acoustics [🔗](#) **Feb 2021 – Mar 2021**
Audio Signal Processing, Image Processing, Audio Data Augmentation

- Scalable mobile application for efficient and inexpensive COVID-19 diagnosis from cough audio. **Winner of HackHarvard 2021** and led to **IEEE conference accepted publication**.
- Trained a deep **CNN fed by MFCC matrices of augmented cough audio samples**. **Highest ranked model** at **DiCOVA Challenge 2021**, organised by IISc Bangalore researchers, achieving a Test AUC score of **87.07%**.

GradCAM | Skin Lesion Classification and Interpretation [🔗](#) **Oct 2020 - Nov 2020**
ML Interpretability, Computer Vision, Transfer Learning

- Implemented **Pytorch hooks to capture backprop gradients** of a **transfer-learned** skin lesion classifier fine-tuned for **modified Skin Cancer MNIST** dataset.
- Produced **localization maps highlighting responsible regions** of the input image using Gradient-weighted Class Activation Mapping (**Grad-CAM**) to better interpret the predictions.


TECHNICAL SKILLS AND INTERESTS

Programming	Python, C++
Machine Learning	PyTorch , PyTorch Lightning, Deep Graph Library, Hugging Face Transformers, Sci-kit-learn
Geometry Processing	Libigl, Polyscope, Autodesk Maya, HLSL
Cloud Platforms	AWS, IBM Watson, Google Earth Engine
Utilities	Git VCS, LaTeX, SQL, CUDA, HTML5, JavaScript
Interests	3D Computer Vision, Neural Geometry Processing , Multimodal Deep Learning, Vision-Language Models, Graph Neural Networks

SCHOLASTIC ACHIEVEMENTS

2025	DIRO Excellence Scholarship <i>Graduate excellence scholarship from the Computer Science Department of Université de Montréal</i>
2024	J.A. DeSève Excellence Scholarship <i>Merit scholarship from Université de Montréal</i>
2024	DIRO Excellence Scholarship <i>Graduate scholarship from the Computer Science Department of Université de Montréal</i>
2022	Winner – HackHarvard (MLH Season 2022) <i>Cough It - mobile app for efficient and inexpensive COVID-19 diagnosis from cough acoustics</i>
2021	IBM Qiskit Advocate Program <i>Selected as Qiskit Advocate for contributions made to the qiskit-machine-learning library</i>
2021	Rank 1 – DiCOVA Challenge 2021 (Track - 1) <i>Top leaderboard position attained by the proposed CNN fed by MFCC matrix extracted from audio samples</i>
2020	AWS ML Scholarship <i>Top 325 candidates selected worldwide</i>
2019	JEE (Joint Entrance Examination) Advanced - 2019 <i>All India Rank: 6,095 (amongst 0.16 million candidates)</i>

OPEN-SOURCE CONTRIBUTIONS

Qiskit	Jun 2021 - Jul 2021
qiskit-machine-learning	
<ul style="list-style-type: none">• Adding callback feature for NN classifier/regressor • Fixing missing optimizer in NN classifier/regressor 	

POSITIONS OF RESPONSIBILITY

Machine Learning Club NITS 	Sept 2020 – May 2023
Project Lead	Oct 2022 – May 2023
Moderator	Sept 2020 – Sept 2022
Computer Science Society NITS	Nov 2020 – Oct 2022
ML Wing Head	Nov 2021 – Oct 2022
Lead Instructor (C/C++)	Jan 2021 – Feb 2021