# Divyam Madaan

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| **CONTACT INFORMATION** | *E-mail:* divyam.madaan@nyu.edu<br>*Website:* dmadaan.com |

**EDUCATION**

**New York University**, New York, United States

Ph.D. Computer Science, Courant Institute of Mathematical Sciences    2021 – Present
- Advisors: Sumit Chopra and Kyunghyun Cho
- GPA: 3.94/4.00

**KAIST**, Daejeon, Republic of Korea

M.S., School of Computing    2019 – 2021
- Thesis Topic: Generalizable Robust Deep Learning via Adversarial Pruning and Meta-Noise Generation
- Advisor: Sung Ju Hwang
- Committee: Jinwoo Shin, Eunho Yang
- GPA: 4.21/4.30

**Panjab University**, Chandigarh, India

B.E. (with Honors) in Information Technology    2015 – 2019
- GPA: 9.21/10

**RESEARCH INTERESTS**

I am primarily interested in learning representations continually on a data stream while making them interpretable and robust to distribution shifts.

**PROFESSIONAL EXPERIENCE**

**NVIDIA**    Summer 2022
Researcher, with Honxu Yin, Wonmin Byeon, Pavlo Molchanov and Jan Kautz
Explore continual learning on a stream of data with heteregenous architectures.

**FOR.ai**    2018 – 2020
Machine Learning Researcher, with Aidan Gomez and Yarin Gal
Explore sparse-ensembles and adversarial robustness to train robust and efficient models.

**Celestini Project India**    Summer 2018
Research Intern, with Aakanksha Chowdhery and Brejesh Lall
Develop an end-to-end real-time system for multivariate air-pollution forecasting of Delhi.

**Google Summer of Code, KDE**    Summer 2017
Open Source Contributor, with GCompris
Implement strategic and musical activities to identify the notes and teach the piano instrument.

**CONFERENCE PUBLICATIONS**

[1] **Heterogeneous Continual Learning**
**Divyam Madaan**, Hongxu Yin, Wonmin Byeon, Jan Kautz, Pavlo Molchanov
*Conference on Computer Vision and Pattern Recognition (CVPR)* 2023
*Selected as Highlight* (235/2360 = 10%)

[2] **On Sensitivity and Robustness of Normalization Schemes to Input Distribution Shifts in Automatic MR Image Diagnosis**
**Divyam Madaan**, Daniel Sodickson, Kyunghyun Cho, Sumit Chopra
*Medical Imaging with Deep Learning (MIDL)* 2023

[3] **Representational Continuity for Unsupervised Continual Learning**
**Divyam Madaan**, Jaehong Yoon, Yuanchun Li, Yunxin Liu, Sung Ju Hwang
*International Conference on Learning Representations (ICLR)* 2022
*Selected as Oral presentation* (54/3391 = 1.6%)

[4] **Online Coreset Selection for Rehearsal-based Continual Learning**
Jaehong Yoon, **Divyam Madaan**, Eunho Yang, Sung Ju Hwang
*International Conference on Learning Representations (ICLR)* 2022

[5] **Learning to Generate Noise for Multi-Attack Robustness**
**Divyam Madaan**, Jinwoo Shin, Sung Ju Hwang
International Conference on Machine Learning (ICML) 2021

[6] **Adversarial Neural Pruning with Latent Vulnerability Suppression**
**Divyam Madaan**, Jinwoo Shin, Sung Ju Hwang
International Conference on Machine Learning (ICML) 2020

[7] **VayuAnukulani: Adaptive Memory Networks for Air Pollution Forecasting**
**Divyam Madaan**\*, Radhika Dua\*, Prerana Mukherjee, Brejesh Lall
IEEE Global Conference on Signal and Information Processing (GlobalSIP) 2019

WORKSHOP
PRESENTATIONS

[8] **Learning to Generate Noise for Multi-Attack Robustness**
**Divyam Madaan**, Jinwoo Shin, Sung Ju Hwang
NeurIPS Workshop on Meta-Learning (MetaLearn) 2020

[9] **Adversarial Neural Pruning**
**Divyam Madaan**, Jinwoo Shin, Sung Ju Hwang
NeurIPS Workshop on Safety and Robustness in Decision Making 2019

PREPRINTS

[10] **What Do NLP Researchers Believe? Results of the NLP Community Metasurvey**
Julian Michael, Ari Holtzman, Alicia Parrish, Aaron Mueller, Alex Wang, Angelica Chen, **Divyam Madaan**, Nikita Nangia, Richard Yuanzhe Pang, Jason Phang, Samuel R. Bowman
Manuscript, 2022

[11] **Learning Sparse Networks Using Targeted Dropout**
Aidan N. Gomez, Ivan Zhang, Siddhartha Rao Kamalakara, **Divyam Madaan**, Kevin Swersky, Yarin Gal, Geoffrey E. Hinton
Manuscript, 2019
(\* indicates equal contribution)

ACADEMIC
SERVICE

*Journal Reviewer:*
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)

*Conference Reviewer:*
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| Neural Information Processing System (NeurIPS) | 2020 – 2022 |
| International Conference on Machine Learning (ICML) | 2020 – 2022 |
| International Conference on Learning Representations (ICLR) | 2022 – 2023 |
| Association for the Advancement of Artificial Intelligence (AAAI) | 2021 |
| Asian Conference on Machine Learning (ACML) | 2020 |

*Workshop Reviewer:*
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| Neural Information Processing System Meta-Learning Workshop | 2020 |
| ICML New Frontiers in Adversarial Machine Learning Workshop | 2022 |

*Student Volunteer*
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| International Conference on Machine Learning (ICML) | 2020 – 2022 |
| International Conference on Learning Representations (ICLR) | 2020, 2022 |
| Neural Information Processing System (NeurIPS) | 2020, 2022 |

HONORS
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| Neural Information Processing System Top Reviewer  (1000/10406 = 0.1%) | 2022 |
| NYU MacCracken PhD Fellowship | 2021 – Present |
| International Conference on Machine Learning Top Reviewer | 2020 |
| KAIST International Students Scholarship | 2019 – 2021 |

MENTORING
EXPERIENCE
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| Codementor | 2018 – Present |
| Mentored university students for Google Summer of Code | Summer 2018 |
| Mentored pre-university students for Google CodeIn | Winter 2018 |

|  | • Mentored students for Season of KDE | Winter 2019 |
|  | • Founded Programming Club that has now grown to 1000+ members. | 2017 – 2018 |
|  | • Co-organized Software Freedom Day | 2017 |

INVITED TALKS
- Representational Continuity for Unsupervised Continual Learning, ContinualAI    2022
- Fooling and protecting deep learning models, Pydata Conference    2018
- Getting started with GCompris, KDE India Conference    2017