Divyam Madaan

CONTACT INFORMATION

E-mail: divyam.madaan@nyu.edu
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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] **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 $(54/3391 = 1.6\%)$

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

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

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

[5] **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

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

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

Preprints

[8] **Heterogeneous Continual Learning**
Divyam Madaan, Hongxu Yin, Wonmin Byeon, Pavlo Molchanov, Jan Kautz
Manuscript, 2022

[9] **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

[10] **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:

- 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:

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

Student Volunteer

- International Conference on Machine Learning (ICML) 2020 – 2022
- International Conference on Learning Representations (ICLR) 2020, 2022
- Neural Information Processing System (NeurIPS) 2020, 2022

Honors

- 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

- 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