Divyam Madaan

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Education

KAIST, Republic of Korea **Sept 2019 - Present**
Masters, Computer Science *GPA: 4.30/4.3*
Advised by Professor Sung Ju Hwang

Panjab University, India **Aug 2015 - 2019**
Bachelor of Engineering With Honours, Information Technology *CGPA: 9.21/10*

Research Interests

Adversarial robustness, Network compression, Ensemble learning, Meta learning

Publications

Divyam Madaan, Jinwoo Shin, and Sung Ju Hwang. Learning to generate noise for robustness against multiple perturbations, 2020 (Paper)

Divyam Madaan, Jinwoo Shin, and Sung Ju Hwang. Adversarial neural pruning. In *NeurIPS Safety and Robustness in Decision Making Workshop 2019; ICML*, 2020 (Paper)

Aidan N. Gomez, Ivan Zhang, Siddhartha Rao Kamalakara, **Divyam Madaan**, Kevin Swersky, Yarin Gal, and Geoffrey E. Hinton. Learning sparse networks using targeted dropout, 2019 (Paper)

Divyam Madaan, Radhika Dua, Prerana Mukherjee, and Brejesh Lall. VayuAnukulani: adaptive memory networks for air pollution forecasting. In *IEEE GlobalSIP*, 2019 (Paper, Code, Slides)

Research Experience

- **Robustness and scalability of networks** **FOR.ai**
  Researcher *May 2018 - Present*
  - Exploring defense against adversarial reprogramming of neural networks.
  - Investigating and developing ways to enhance the diversity of ensemble models.
- **Multivariate time series forecasting of air pollution** **IIT Delhi**
  Research Intern | Advisors: Dr. Aakanksha Chowdhery and Prof. Brejesh Lall *June 2018 - Aug 2018*
  - Worked on exploring computationally efficient techniques in the domain of multivariate time series forecasting with a focus on state of the art forecasting models.
  - Leveraged wavenet and attention based architecture for tackling long term dependencies of different pollutants to make reliable and accurate sequence predictions.
- **Adaptive computation time** **FOR.ai**
  Research Project *Jan 2018 - April 2018*
  - Implemented Adaptive computation time, an algorithm which allows recurrent neural networks to learn how many computational steps to take between receiving an input and emitting an output.
  - Implemented a new ponder cost which relaxes the objective constraints when the model is struggling and then asks for computation efficiency only once the model has solved the problem

Professional Experience

- **Google Summer of Code, KDE**
  Software Developer *May 2017 - Sept 2017*
  - Implemented the AI and multi-player mode for Oware, a strategy activity for GCompris using JavaScript and Qt5.
  - Formulated an activity play piano to help kids to learn to play piano.
  - Implemented note names activity to help kids identify notes.
- **Season of KDE**
  Software Developer *Nov 2016 - Feb 2017*
  - Designed and implemented the categorization activity for images and words with 30 categories using Qt5 and JavaScript.
  - Implemented the background music functionality in GCompris in C++ and Qt5.

Technical and Personal skills

- **Programming Languages:** C, C++, Python, HTML, CSS, Javascript Arduino, TeX
- **Technologies and Frameworks** Linux, Git, Docker, Qt, Django, openCV, TensorFlow, Keras
- **General Business Skills:** Good presentation skills, Works well in a team.

Leadership and Mentoring Experience

- **Codementor** **Sept 2018 - Present**
  Mentor at Codementor
- **Google CodeIn** **Oct 2018 - Jan 2019**
  Mentored students for Google CodeIn
- **Google Summer of Code** **May 2018 - Aug 2018**
  Mentored students for Google Summer of Code.
- **Season of KDE** **Dec 2017 - Feb 2018**
  Mentored students for Season of KDE.
- **Programming Club** **Aug 2017 - Sept 2018**
  Founded the community which has grown to 650+ members.
- **Software Freedom Day** **Sept 2017**
  Co-organizer and speaker at Software Freedom Day.

Other Activities and Achievments

- **Academic Reviewer** **2020**
  Reviewer for ICML, ACML, Neurips.
- **Volunteer** **2020**
  Volunteer for virtual ICLR, ICML conference.
- **Pydata Conference** **Aug 2018**
  Speaker at Pydata Delhi.
- **KDE Conference** **Mar 2017**
  Speaker at KDE Conference at IIT, Guwhati.