Ayush **JAIN**

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Education

Carnegie Mellon University Pittsburgh, PA
Masters in Robotics Aug. 2021 – Present
Thesis Advisor : Prof. Katerina Fragkiadaki
Thesis Committee : Prof. Tom Mitchell, Nikolaos Gkanatsios

Birla Institute of Technology & Sciences Rajasthan, India
Bachelor in Computer Science (9.33 / 10.0) Aug. 2017 – May 2021
Thesis : Active Embodied Vision - Towards Self-Supervised Never Ending Learners
Thesis Advisor : Prof. Katerina Fragkiadaki & Prof. Pratik Narang

Education

Publications

2022 Gkanatsios, N.*, **Jain, A.***, Zhou X., Zhang Y.*, Fragkiadaki, K., 2022 "Spatial reasoning as Object Graph Energy Minimization". (Under Review)

2022 **Jain, A.***, Gkanatsios, N.*, Mediratta, I., Fragkiadaki, K., 2022 "Bottom Up Top Down Detection Transformers for Language Grounding in Images and Point Clouds". (ECCV 2022) (https://butd-detr.github.io/)

2021 Fang, Z.*, **Jain, A.***, Sarch, G.*, Harley, A., Fragkiadaki, K., 2020 "Move to See Better : Self-Improving Embodied Object Detection". https://arxiv.org/abs/2012.00057 (BMVC 2021)

2021 **Jain, A.***, Ramaprasad, R.*, Narang, P., Mandal M., et al., 2020 "AI-Enabled Object Detection in Unmanned Aerial Vehicles for Edge Computing Applications." (IEEE Network. 2021)

2020 Dawei Du, Longyin Wen, Pengfei Zhu, Heng Fan, Qinghua Hu, Haibin Ling, Mubarak Shah, Junwen Pan, **Jain, A.**, Narang, P., et al., 2020 "VisDrone-DET2020 : The Vision Meets Drone Object Detection in Image Challenge Results. European Conference on Computer Vision (ECCV) Workshop."

2020 **Jain, A.***, Meenachi, N.M. and Venkatraman, B., 2020 "NukeBERT : A Pre-trained language model for Low Resource Nuclear Domain." arXiv preprint arXiv:2003.13821 (2020). https://arxiv.org/abs/2003.13821

Academic and Industrial Research Experience

August 2021 – Present | **Carnegie Mellon University | Graduate Research Assistant, Pittsburgh, USA**

- With Prof. Katerina Fragkiadaki, I am working on language grounding in static 2D and 3D scenes, robot manipultation following language instructions, and instruction following in indoor household environment.

May 2022 – August 2022 | **Apple | Research Intern, Cupertino, USA**

- I worked on unsupervised multimodal representation learning.

May 2020 – July 2021 | **Carnegie Mellon University (CMU) | Research Associate, Pittsburgh, USA**

Project Page Code Paper

- Developed a method enabling an embodied agent to learn about objects without ground truth supervision in an unseen 3D environment by allowing the agent to move around.

August 2019 – May 2020 | **MultiCog Research Group | Computer Vision Research Assistant, Pilani, India**

Project Page Code Paper

- Implemented **retinanet** from scratch and developed an aerial object detection pipeline in Tensorflow.
- Achieved **about 10%** increase in mean average precision than baseline retinanet model
- Achieved **top performances in ECCV 2020** Aiskyeye Object Detection Challenge obtaining **14%** better performance than their baseline model.

May 2019 – August 2019 | **Indira Gandhi Center for Atomic Research | Research Assistant, Chennai, India**

Project Page Code Paper

- Preprocessed **7000 PDF** Nuclear research papers to build **first nuclear language dataset - NText**
- Built **NQuAD(Nuclear Question Answering Dataset)** consisting of 730 Q/A.
- Achieved F1 score of **93.87** and exact match score of **88.31** a 1.22 improvement on former and 5.21 revision on latter from BERT model.

Teaching and Leadership Roles

2019-20	Teaching Assistant, Artificial Intelligence at BITS PILANI
2019-20	Teaching Assistant, Machine Learning at BITS PILANI
2019-20	Team Leader, Microsoft Student Partner, BITS Pilani
2018-20	Teaching Assistant, Computer Programming at BITS PILANI

Awards and Scholarships

2019-20	**Google AI Summer School** 1/50 students across India selected for Google AI summer school
2019-20	**York CVR – VISTA Vision Science Summer School** 1/50 students selected worldwide
2018-20	**Institute Merit Scholarship** Awarded to top 3% students for Exceptional Academic Performance
2018-19	**Flipkart Machine Learning Hackathon (Level 1)** 2nd position in university and 33rd position nationwide
2017-18	**Mcrosoft Codefundo++ Hackathon** Placed 3rd/150+ teams on campus
2016-17	**KVPY Scholar** A national level drive for adjudging high research potential
2016-17	**National Science Examination in Physics (NSEP) Fellow**

Technical Expertise

Programmation	**Python**, **C**, **C++**, Java, HTML, CSS
Frameworks	**Pytorch**, **Tensorflow**, Django
Operating Systems	Linux, Mac OS, Wnidows 7/8/10

References

Dr. Katerina Fragkiadaki, Asst. Prof., Machine Learning Dept., Carnegie Mellon University; katef@cs.cmu.edu
Dr. Navdeep Jaitly, Research Scientist, Machine Learning Research, Apple; njaitly@apple.com
Dr. Miguel A. Bautista, Research Scientist, Machine Learning Research, Apple; mbautistamartin@apple.com
Dr. Pratik Narang, Asst. Prof., Computer Science Dept., BITS Pilani; pratik.narang@pilani.bits-pilani.ac.in
Dr. N.M. Meenachi, Scientist, Indira Gandhi Center for Atomic Research; meenachi@igcar.gov.in