

Ayushi Dutta

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Research Interests

Domain Machine Learning, Deep learning, Computer Vision, Natural Language Processing
Sub-Domain Scene understanding, Video understanding

Education

Oct 2020 - **University of Copenhagen**, Denmark
Jan 2021 **Single Subject, Advanced NLP**, Grade: 10/12, ECTS: B

Jan 2016 - **IIIT Hyderabad**, India
Dec 2019 **MS (Research), Computer Science**, CGPA: 7.8/10
Advisors: Prof. C.V. Jawahar, Prof. Yashaswi Verma
Master's thesis: Automatic Image Annotation

Aug 2007 - **SRM University**, India
May 2011 **BTech, Computer Science & Engineering**, CGPA: 8.9/10

Publications

Conference [1] **Ayushi Dutta**, Yashaswi Verma, CV Jawahar. "Recurrent Image Annotation With Explicit Inter-Label Dependencies", *16th European Conference On Computer Vision (ECCV), 2020*

Journal [1] **Ayushi Dutta**, Yashaswi Verma, CV Jawahar. "Automatic Image Annotation: The Quirks and What Works", *Multimedia Tools and Applications, June 2018*

Research Experience

Feb 2021 - **IIT Jodhpur**, Research collaboration with Prof. Yashaswi Verma, Remote.
now
Learning better representations fusing global and spatial label context with Graph Neural Networks for multi-label image classification.

Feb 2019 - **Target Corporation**, Senior Engineer, Bangalore.
Sep 2020

- *Video based theft detection in self checkout counters:* We prototyped the problem of identifying theft from self checkout counters with 3 tasks, object detection, object tracking and action recognition for robustness. We benchmarked multiple object detection methods for detecting small scale products in low resolution images in different pose, orientation and inference speeds. We explored linear and non-linear tracking, modifying the feature matching constraint for low resolution images. We incorporated object context for action recognition due to overlapping action sequences.
- *Fine-grained product recognition and planogram compliance*

July 2018 - **Siemens Research**, *Research Intern*, Bangalore.
Dec 2018

Road accidents anomaly detection from Indian traffic videos: I studied unsupervised spatio-temporal autoencoders versus semi-supervised methods for detecting road accident anomalies in Indian traffic videos.

May 2016 - **IIIT Hyderabad (CVIT Lab)**, *Graduate Research Assistant*, Hyderabad, Masters Thesis.
June 2018 Advisors: Prof. C.V. Jawahar, Prof. Yashaswi Verma

- *CNN-RNN for Multi-label image classification* We studied CNN-RNN frameworks to improve multi-label image classification by modelling label correlations with RNN and proposed a novel loss function, with which RNNs can model multiple label prediction paths, thus improving the earlier limitation and performance of CNN-RNN methods in the multi-label context. **(ECCV 2020[1])**
- *Multi-label image classification - what works* We explored the core issues in the multi-label image classification problem that bounds the performance of various approaches. We designed empirical experiments to study the trade-off of per label/per-image evaluation metric as to what should be preferred. We proposed metrics to quantify the image/label diversity in existing datasets, that can lead to better dataset designs in the future. **(MTA 2018[1])**

Academic Projects(Selected)

Dec 2020 - **Compositional skills of RNNs on SCAN tasks**, *Course Instructor: Prof. Desmond Elliot*, University of Copenhagen.
Jan 2021

To test the compositional skills of RNNs on the SCAN tasks, I proposed to incorporate linguistic features like POS tags and curriculum based learning so that RNNs learn simpler tasks first and have additional helpful context. I identified that while the proposed approaches improve performance on the SCAN tasks, they still fail the test of compositionality.

Industrial Experience

Aug 2014 - **Cognizant Technology Solutions**, *Associate - Projects*, Bangalore
Dec 2015 Software development - large scale web projects, open source and enterprise tools.

Business analyst - requirement cycle of software development.

July 2011 - **Avnet Services**, *Consultant*, Chennai

July 2014 Software development - large scale web projects, open source and enterprise tools.

Skills

Coding Python, Matlab, R, C++

Frameworks Tensorflow, Caffe, Pytorch

Tools Git, Docker

Awards and Fellowships

Employee Quarterly Awards, *Target*, Aug 2019

Research Fellowship, *IIIT Hyderabad*, May 2016 - July 2018

Employee Quarterly Awards, *Cognizant*, Sep 2015

Academic Scholarship, *SRM University*, 2007, 2008

Scientific Services

Summer IIITH Deep Learning Summer School(Volunteer, July 2016)
School

Additional

Languages English(C2), Bengali(Native), Hindi

References Prof. C.V. Jawahar, *IIIT Hyderabad* (Email: jawahar@iiit.ac.in)

Prof. Yashaswi Verma, *IIT Jodhpur* (Email: yashaswi@iitj.ac.in)