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 - Jan 2021 — **University of Copenhagen**, Denmark
Single Subject, Advanced NLP, *GPA*: 10/12, *ECTS*: B

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

Aug 2007 - May 2011 — **SRM University**, India
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 - now — **IIT Jodhpur**, *Research collaboration with Prof. Yashaswi Verma*, Remote.

Learning better representations fusing global and spatial label context with Graph Neural Networks for multi-label image classification.

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

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

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 - June 2018 **IIIT Hyderabad (CVIT Lab)**, *Graduate Research Assistant*, Hyderabad, Masters Thesis. 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 quantity 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 - Jan 2021 **Compositional skills of RNNs on SCAN tasks**, *Course Instructor: Prof. Desmond Elliot*, University of Copenhagen, Grade: 10/12, ECTS (B).

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 - Dec 2015 **Cognizant Technology Solutions**, *Associate - Projects*, Bangalore

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

Business analyst - requirement cycle of software development.

July 2011 - July 2014 **Avnet Services**, *Consultant*, Chennai
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 School: IIITH Deep Learning Summer School(Volunteer, July 2016)

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)*