Riddhiman Dasgupta

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Interests:

Deep Learning, Computer Vision, Machine Learning, Natural Language Processing

Education:

Master of Science, Computer Science and Engineering*(2013-2017)* International Institute of Information Technology, Hyderabad **Advisor:** Dr. Anoop Namboodiri, Center for Visual and Information Technology (CVIT)	**9.68/10**
B.Tech in Computer Science and Engineering*(2009-2013)* Heritage Institute of Technology, Kolkata, Affiliation: WBUT	**8.67/10**
Higher Secondary Examination *(2007-2009)* South Point High School, Kolkata, Affiliation:WBCHSE	**83.00 %**
Secondary Examination *(2006-2007)* South Point High School, Kolkata, Affiliation: WBBSE	**94.50 %**

Select Publications:

– Full list available at Google Scholar

– **Dialogue Act Sequence Labeling Using Hierarchical Encoder With CRF**, AAAI 2018, New Orleans, USA.
Harshit Kumar, Arvind Agarwal, <u>Riddhiman Dasgupta</u>, Sachindra Joshi, Arun Kumar

– **Cognition-Cognizant Sentiment Analysis with Multitask Subjectivity Summarization based on Annotators Gaze Behavior**, AAAI 2018, New Orleans, USA.
Abhijit Mishra, Srikanth Tamilselvam, <u>Riddhiman Dasgupta</u>, Seema Nagar, Kuntal Dey

– **Leveraging Multiple Tasks to Regularize Fine-Grained Classification**, ICPR 2016, Cancun, Mexico.
<u>Riddhiman Dasgupta</u>, Anoop Namboodiri (**Oral Presentation**)

– **Learning Clustered Subspaces for Sketch-based Image Retrieval**, ACPR 2015, Kuala Lumpur, Malaysia.
Koustav Ghosal, Ameya Prabhu, <u>Riddhiman Dasgupta</u>, Anoop Namboodiri (**Oral Presentation**)

Experience:

Dec'16 - Present	**Research Engineer** at IBM Research, India, in the Cognitive Finance team, working on abstractive and extractive summarization, text paraphrasing, semantic text similarity, entity classification.
Jan'14 - Present	**Research Assistant** at CVIT, IIIT Hyderabad, under the guidance of Dr. Anoop Namboodiri, working on fine-grained recognition using multi-task convnets and semantic taxonomies/hierarchies.
Aug'14 - Dec'15	**Teaching Assistant** **Pattern Recognition**, Monsoon '14, assisting Dr. Anoop Namboodiri, with 130+ students. **Computer Vision**, Spring '15, assisting Dr. Anoop Namboodiri, with 70+ students. **Machine Learning**, Monsoon '15, assisting Dr. C.V. Jawahar, with 90+ students.
Jun'12 - Jul'12	**Summer Intern** at CSTAR, IIIT Hyderabad under the guidance of Dr. Kannan Srinathan, developing JavaScript modules for elliptic curve cryptography algorithms.
Jun'11 - Jul'11	**Summer Intern** at NJIT, New Jersey under the guidance of Dr. Yun Qing Shi, designing, building and evaluating a dataset for image splicing detection using SVMs and steganographic features.

Skills:

Programming Languages	**Proficient**: • Lua • Python • C **Acquainted**: • C++ • Javascript • Matlab
Libraries & Tools	• PyTorch • Torch7 • Keras • Caffe • ScikitLearn • OpenCV • Bash • Git • LaTeX• MySQL

Relevant Course Work:

Graduate Level Courses	• Machine Learning • Computer Vision • Optimization Methods • Statistical Methods in AI • Web Mining • Data Mining
Undergraduate Level Courses	• Data Structures and Algorithms • Artificial Intelligence • Image Processing • Operating Systems • Databases • Networking

Volunteer Activities:

- Open source enthusiast, with contributions such as **treeLSTM.pytorch** having more than 250 stars+forks
- Organizer for **Deep Learning for NLP Workshop**, held at IBM Research India.
- Content creator/lab instructor for **Deep Learning Summer School** and **Deep Learning Short Course**.
- Volunteer at Asha Kiran, school for under-privileged children at IIIT Hyderabad.
- Lead at AI Hobby Group, ACM Student Chapter, Heritage Institute of Technology.

Awards and Achievements:

- **AIR 273** out of 224160 in the paper Computer Science and Information Technology in GATE 2013 (top 0.12 %).
- **Founding Member, Treasurer** of ACM Student Chapter, Heritage Institute of Technology, Kolkata
- **National Finalist Team** at Code.Fun.Do 2015 hackathon, for the app Khoj.

Select Projects:

Hierarchical RNNs with Structured Prediction Losses for Sequence Labelling *Feb 2017 - Sep 2017*
The goal is to combine hierarchical RNNs along with graphical models for sequence labelling, such as extractive summarization and dialogue act recognition. Hierarchical RNNs capture structural dependencies, while linear chain CRFs capture dependencies among labels. We replicate state-of-the-art results on extractive summarization and surpass existing state-of-the-art numbers for dialogue act recognition.

Sequence to Sequence Models for Abstractive Summarization *Jul 2017 - Nov 2017*
We implemented various sequence to sequence architectures for abstractive summarization. Multiple state-of-the-art attention mechanisms were implemented such as Luong attention, Bahdanau attention, intra/self attention, temporal attention, etc. Also supervised a summer intern in the implementation of sequence to sequence variational auto-encoders for the end goal of paraphrase generation, which later got published at AAAI 2018.

Multi-task Learning In The Context Of Deep Neural Networks *(Aug 2014 - Dec 2016)*
My MS thesis, under the guidance of *Dr. Anoop Namboodiri, CVIT,* deals with leveraging multiple tasks to act as regularizers for training deep neural networks. Our main contribution is to utilize the taxonomic/semantic hierarchies among classes, where each level in the hierarchy is posed as a classification problem, and solved jointly using multi-task learning. We employ a cascaded multi-task network architecture, where the output of one task feeds into the next, thus enabling transfer of knowledge from the easier tasks to the more difficult ones. To gauge the relative importance of tasks, and apply appropriate learning rates for each task, we propose a novel task-wise dynamic coefficient.

Accelerating Neural Network Training By Varying Network Size *(Aug 2016 - Dec 2016)*
This project, in collaboration with *Soumith Chintala, Facebook AI Research*, aims to accelerate the training of deep neural networks by expanding/reducing them in the middle of training without degrading/sacrificing performance. Our experiments show that morphing a network by deepening and/or widening its layers during training results in increased accuracies and decreased training times.

Text Detection using Region Based CNNs *(May 2013 - May 2014)*
Worked under the guidance of *Dr. Ujjwal Bhattacharya, CVPR, ISI, Kolkata*, to train convolutional neural networks to identify and detect text in natural scene text images. Maximally stable extremal regions were extracted from images, and pruned regions were fed to the convolutional neural networks to identify regions as text or non-text. Text regions were then grouped from the character-level to word-level and subsequently to the line-level using heuristics.