Jatin Chauhan

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https://github.com/chauhanjatin10

Education

July, 2017–Present **Bachelor Of Technology In Computer Science And Engineering**, *IIT Hyderabad*, *CGPA – 9.06/10* Tentative graduation time - June, 2021.

April, 2015–March, 2017 **Senior Secondary**, *Modern Vidya Niketan School*, Faridabad, *Percentage – 95.0*.

Interests

- Natural Language Processing
- Explainability and Interpretability of Deep Neural Networks
- Topological Analysis of Neural Networks
- Knowledge Graphs
- Deep Learning in Graphs and Graph Neural Networks

Publications

Conference Publications

May 2020 Paper Titled: **Learning Representations using Spectral-Biased Random Walks on Graphs**. Paper Link: https://arxiv.org/pdf/2005.09752.pdf
Authors: Charu Sharma, **Jatin Chauhan** and Manohar Kaul
[A] Conference: **International Joint Conference on Neural Networks 2020, Glasgow, UK**
Description: A novel random walk method based on spectral similarity of a node to its neighbours. The model was equipped with a novel Wasserstein regularizer in the final objective function.

December 2019 Paper Titled: **Few-Shot Learning on Graphs via Super-Classes based on Graph Spectral Measures**. Paper link: https://www.openreview.net/forum?id=Bkeeca4Kvr
Authors: **Jatin Chauhan**, Deepak Nathani and Manohar Kaul
[A*] Conference: **International Conference on Learning Representations 2020, Addis Ababa, Ethiopia**
Description: We proposed to study the problem of Few-shot classification in the graph domain for the first time. We proposed a novel method for clustering the samples prior to learning which takes into account the spectral similarity of the samples with one another via Wasserstein distance over the distribution of the graph spectrum.

May 2019 Long Paper Titled: **Learning Attention-based Embeddings for Relation Prediction in Knowledge Graphs**. Paper link: https://www.aclweb.org/anthology/P19-1466.pdf
Authors: Deepak Nathani*, **Jatin Chauhan***, Charu Sharma* and Manohar Kaul
(* denotes *equal contribution*)
[A*] Conference: **Association for Computational Linguistics 2019, Florence, Italy**
Description: We proposed a novel method to improve the aggregation and propagation of information amongst the entities in the graph by utilizing Graph Attention Networks equipped with relation specific attention.

Under Review

September 2020 Paper Titled: **Target-agnostic Adversarial Attacks with Query Budgets on Language Understanding Models**.
Authors: **Jatin Chauhan**, Karan Bhukar and Manohar Kaul
Description: We study the problem of adversarial attacks by limiting the budget of the attacking methods via restricting the number of calls made to the attacked neural network. Our method works well under the limited budget with high transferability and semantic similarity to the original sentences.

Work Experience

June, 2020–August, 2020 **Deep Learning Intern**, LEARNGRAM AI, Developed deep learning applications for e-learning platform which includes but not limited to: designing learning path over the concept map of the student courses using graph algorithms and deep learning, designing Recommender System for education content suitable for the users via cutting-edge NLP and Computer Vision tools.
Summer Internship 2020

January, 2018–May, 2018 **NLP and Software Developer Intern**, NEWSINFO.
Designed the backend for deep learning APIs. Worked as NLP engineer to create text to speech system that reads news in multiple languages along with a language summarizer for creating short summaries

Achievements

2020 **Undergraduate Research Excellence Award**

2019 **Secured 5^{th} rank in PanIIT Hackathon: Artificial Intelligence for India**

2019 **Received Microsoft Research Travel Grant for ACL 2019 held in Florence, Italy**

2018 **Runner-Up: Tinkerer's Lab Competition on AI**

2017 **IIT JEE Advanced Rank - 554**

2017 **KVPY Fellowship**

Teaching

August 2019 – November 2019 and August 2018 – November 2018 **Introduction to Programming:** My responsibilities included grading assignments and exams, conducting lab sessions for students and assisting in preparing the teaching material.

Projects

January, 2020 – March, 2020 **Mathematical Question Answering via NALU based Transformers:** Designed a new Transformer architecture with arbitrary kernel mechanisms replacing the standard Multi-Head Attention for higher capacity. Additionally, each layer was integrated with a Neural Arithmetic Logic Unit which indudes a bias for mathematical calculations thus achieving better performance than standard Transformer model.

February, 2020 – April, 2020 **Image Captioning via Kernelised Attention:** Designed a new image captioning model containing kernel-based attention mechanism coupled with gating to improve information filtration as well as sparse activation functions to improve the model performance and generalization.

August, 2019 – October 2019 **Distant Supervision Relation Extraction Using Manifold-Mixup:** Designed an improved version of the BERT model via manifold-mixup to improve the generalization of the BERT model as well as achieving higher performance.

August, 2019 – November 2019 **Knowledge Graph Embeddings via Attention based Random Walks:** A new encoder-decoder framework for knowledge graph embedding methods. To leverage the KG structure, multiple random walks are performed over the KG and are aggregated for each entity and passed through ON-LSTM language model. The entity and relation embeddings are then fed to the decoder. The method achieves higher performance than existing baselines which don't leverage graph structure.

January, 2019 – February, 2019 **Peer to Peer file sharing and distributed downloading system:** A peer to peer file sharing and downloading system in Golang via concurrent programming. Integrated message system which allows peers to chat simultaneously while sharing files.

Technical skills

Languages	Python, C++, Golang
Frameworks	Git, Django
ML Frameworks	Pytorch, Tensorflow, Scikit-Learn, Matplotlib

Courses

Institute Courses Information Retrieval, Data Mining, Theory of Computation, Principles of Programming Languages, Computer Networks, Databases, Data Structures, Operating Systems, Compilers, Algorithms, Discrete Mathematics, Calculus, Probability, Linear Algebra