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EDUCATION

University of Massachusetts Amherst

Master of Science in Computer Science. GPA: 4.0/4.0

September 2021 - May 2023

Indian Institute of Technology Patna

Bachelor of Technology in Computer Science and Engineering. GPA: 8.2/10

August 2015 - May 2019

SKILLS

Programming languages: Python, Java, C#, C, MySQL, CosmosDB, Distributed Systems, MS Azure, AWS, Shell Scripting
Software/Toolkits: TensorFlow, Keras, PyTorch, NumPy, SciPy, Pandas, Scikit-learn, Matplotlib, Plotly, MySQL

WORK EXPERIENCE

Lowe's Companies, Inc. Data Scientist (L4).

July 2023 - Present

- Advisor: [Dr. Surya Kallumadi](#)
- Building context-aware query auto-completion system, and conversation-guided product recommendation and project question answering system, to improve the shopping experience on Lowe's website.

IBM. Graduate Student Researcher.

February 2023 - June 2023

- Advisors: [Dr. Taesung Lee](#) and [Dr. Youngja Park](#)
- Project: **BERT explainability** - Devised a method to obtain text descriptions per neuron, of concepts that activate those neurons in a BERT model. Work submitted to EMNLP 2023.

Google. Engineering Intern in the Pixel Watch Ambient Compute team.

September 2022 - December 2022

- Advisor: [Dr. Cac Nguyen](#)
- Project: **Low latency off-body detection on the Google Pixel Watch**
 - Created an end-to-end framework which loads and processes wear data from the cloud, trains any generic neural network on the wear data to detect whether the watch is on-wrist or off-wrist, and evaluates how the network performs in a real-world setting.
 - Performed extensive experimentation with different convolutional neural networks and different off-body detection algorithms, and achieved a performance which competes with the deployed heuristic algorithm.

Lowe's Companies, Inc. Graduate Data Science Intern in the Discovery Data Science team.

May 2022 - August 2022

- Advisor: [Dr. Surya Kallumadi](#)
- Project: **Low latency semantic product search and query auto-completion**
 - Trained eXtreme Multi-label Classification (XMC) models for semantic product search and query auto-completion, using the [PECOS XMC framework](#).
 - The trained XMC semantic product search and query auto-completion models show recall values competitive with the deployed search and type-ahead prediction systems respectively, and (most importantly!) improve the per-query serving latency by at least 20 times.
 - Both the developed XMC models have been moved to production, and are serving approximately 20 million customer transactions every week.

Microsoft Research. Research Fellow of team Sankie.

August 2019 - August 2021

- Advisors: [Ms. Sonu Mehta](#), [Dr. Rahul Kumar](#) & [Dr. Ranjita Bhagwan](#)
- Project: **ML for DevOps tasks involving code-edits**
 - Tasked with generating commit messages, and automatically classifying edit, based on the content of the commit.
 - Scraped commit-commit message pairs from more than 1000 GitHub repositories. Built ACMG (Automatic Commit Message Generator), based on an existing work [code2vec](#), and trained it on the scraped dataset.
 - Built edit2vec (an extension of code2vec) for automatic code edit classification. Trained and analyzed it on the ManySStuBs4J dataset, and on another dataset that we collected.

- Achieved an accuracy of over 99% on code edit classification. Discovered code2vec isn't generalizable to other downstream tasks.

GREYC lab, University of Caen Normandy. Research Intern in the HULTECH team.

May 2019 - July 2019

• Advisor: [Dr. Gaël Dias](#)

• Project: **Analysis of the effects of gender on the estimation of depression severity [IJCNN 2021]**

- Developed various multitask learning model architectures to concurrently predict depression score in men and women, and trained them on the DAIC-WOZ dataset.
- Identified that a) gender information substantially improves the performance of depression severity estimation, and b) concurrently learning to predict depression level and the gender of the participant improves the performance of depression severity estimation.

AI-NLP-ML lab, IIT Patna. Research Assistant.

August 2018 - May 2019

• Advisors: [Dr. Sriparna Saha](#), [Dr. Gaël Dias](#) & [Dr. Mohammed Hasanuzzaman](#)

• Projects:

1) Depression severity estimation using multimodal deep learning

- Designed and trained encoding networks for acoustic, text and visual modalities using the DAIC-WOZ dataset.
- Designed attention-based deep neural network for the fusion of modality representations obtained from the corresponding encoding networks.
- The proposed model has outperformed the state of the art by 7.17% on RMSE and 8.08% on MAE.

2) Multitask representation learning for multimodal estimation of depression severity [IEEE IS 2019]

- Developed different multitask learning model architectures to learn representations of individual modalities, by simultaneously predicting depression severity score and class.
- Outperformed the state of the art by 4.93% on RMSE and 1.50% on MAE. Set new baseline for depression classification, 66.66% accuracy and 0.53 F1-score.

3) Multitask learning to concurrently estimate emotion intensity and depression severity [IEEE CIM 2020]

- Designed and trained various multitask learning model architectures (fully shared, shared private and adversarial shared private) to concurrently predict depression score and emotion intensity using text data.
- Showed that substantial performance improvements in predicting the depression severity can be achieved by using emotion-aware models.

SELECTED PROJECT

Research Paper Tagger (RPT), with [Dr. Mohit Iyyer](#), at UMass Amherst.

Objective: Automatically tagging the research track of an NLP paper, given the title, abstract and the authors.

- Built a dataset of 1744 research paper-research track pairs from ACL 2021, 2020 and 2019. Fine-tuned a BERT-based classifier on the collected dataset, on various combinations of title, abstract and the authors of the research papers.
- Achieved a top-1 accuracy of 70% and a top-3 accuracy of 83% on the test split of the collected dataset. Working on publishing this work in a conference/workshop.

PUBLICATIONS

- Gender-Aware Estimation of Depression Severity Level in a Multimodal Setting**
Syed Arbaaz Qureshi, Gaël Dias, Mohammed Hasanuzzaman and Sriparna Saha.
International Joint Conference on Neural Networks, 2021. [[pdf](#)]
- Improving Depression Level Estimation by Concurrently Learning Emotion Intensity**
Syed Arbaaz Qureshi, Gaël Dias, Mohammed Hasanuzzaman and Sriparna Saha.
IEEE Computational Intelligence Magazine, Volume 15, Issue 3, 2020. [[pdf](#)]
- Multitask Representation Learning for Multimodal Estimation of Depression Level**
Syed Arbaaz Qureshi, Sriparna Saha, Mohammed Hasanuzzaman and Gaël Dias.
IEEE Intelligent Systems, Volume 34, Issue 5, 2019. [[pdf](#)]
- Automatic Prediction of PHQ-8 Questionnaire Scores using Artificial Intelligence**
Gaël Dias, Syed Arbaaz Qureshi, Sriparna Saha and Mohammed Hasanuzzaman.
French Journal of Psychiatry, Volume 1, Supplement 2, 2019 [[pdf](#)]