Megh Thakkar

https://www.linkedin.com/in/megh-thakkar/

Personal Website
+91–9829799877

EDUCATION

Birla Institute of Technology and Science (BITS), Pilani   *2016-2020*
B.E. in Computer Science Engineering, *GPA: 9.23/10*   Pilani, India
Relevant Courses: Neural Networks and Fuzzy Logic, Information Retrieval, Data Mining, Linear Algebra, Calculus, Probability and Statistics, Object Oriented Programming, Data Structures, Algorithms, Database Systems, Computer Programming

EXPERIENCE

NTU-NLP, Nanyang Technological University,   *Aug 2020 – Present*
Open Domain Question Answering by Jointly Using Text and Knowledge Base.   Singapore

- Working on improving **retriever-reader models** for **open domain question answering**, currently for the Natural Questions Dataset.
- Constructing **networkx graphs** from retrieved documents using identified entities and enhancing the text representation using **graph convolutional networks**.
- Experimenting with various transformer models (**BERT** and **RoBERTa** for the retriever, **BART** and **T5** for the reader) for knowledge-enhanced answer generation.

Speech and Language Processing Group, Nanyang Technological University,   *Aug 2019 – December 2019*
Speech Emotion Detection and Dialogue Generation.   Singapore

- Created an **API Gateway** to access various existing deep learning modules such as NER (Name-Entity Recognition), SUD (Sentence Unit Detection), and summarization through a standard interface.
- Built a **light weight** production ready **CNN based model** for speech based emotion detection.
- Collaborated on a project aimed at **diversifying dialogue generation** models using a context based **generator-discriminator architecture**.

Language Technology Group, University of Hamburg,   *May 2019 – July 2019*
Language Model for Query Auto-completion.   Hamburg, Germany

- Developed a bi-LSTM based hybrid **character level language model** infused with word embeddings, such as GloVe, ELMo, and Flair, as well as a combination of FastText and sent2vec.
- Used decoding methods like **beam search** and **top k** sampling along with reranking methods such as **LambdaMART** and tensorflow-ranking.

Department of Visual Media, BITS, Pilani,   *April 2018 – March 2019*
Head.   Pilani, India

- Head of a department responsible for handling all the technical aspects of the sports, cultural, and technical festivals of the university, such as registration software, payment gateways, and event management systems.
- Introduced a QR code based smart ticketing system and a mobile wallet for concerts and food stalls. Led the growth of QR code based ticket sales from 700 to 12,000 and transactions on the mobile wallet from 200,000 INR to 2,000,000 INR within a year.

RELEVANT PROJECTS

VQA Models that Read Text   *Jan 2020 – May 2020*
- Conducted literature review and studied various methods of **multimodal deep learning**, **multimodal attention** and its applications in downstream tasks such as **TextVQA** and **Visual Commonsense Reasoning**.
- Identified approaches to enhance the baseline model by improving the **OCR module** using simple heuristics.
- A **book chapter** on multi-modal learning and its applications for text reading and visual commonsense reasoning is in submission.

Visual Question Answering   *Aug 2018 – Dec 2018*
- Implemented a basic **visual question answering** system for the MS Coco Dataset.
- Used the pretrained **VGG 16** model for image feature extraction and stacked **LSTM layers** for text feature extraction.
- Experimented with combining the multimodal feature vectors using naive **concatenation** and **Hadamard product** approaches for the final classification.

Feedback-based Retrieval System with Sentence Ranking   *Oct 2018 – Dec 2018*
- Designed and implemented an efficient, configurable, and intelligent retrieval framework for text documents.
- Used NLP methods and concepts such as **stemming**, **tf-idf scores**, **BM25 scores** and **nltk** for text processing.
- Implemented a **click-based feedback system** to improve suggestions to re-rank documents based on current retrieval.

TECHNICAL SKILLS

Programming – Python, C, Java, C++, SQL
Libraries and Frameworks – PyTorch, pytorch-geometric, Keras, scikit-learn, NLTK, networkx, Django, REST

ACHIEVEMENTS

- Awarded the **DAAD-WISE scholarship** to pursue summer research in Germany and the **mitacs Globalink** scholarship to pursue research in Canada.
- Awarded the **Institute Merit Scholarship** for being in the top 3 percentile of students across all the departments.
- Selected for **Google Summer of Code, 2018**.