Thanmay Jayakumar

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EDUCATION

VISVESVARAYA NATIONAL INSTITUTE OF TECHNOLOGY Nagpur, India | 2019 - 2023
(B.Tech) Electronics & Communication Engineering

GLOBAL INDIAN INTERNATIONAL SCHOOL
Singapore | 2019

COURSEWORK

- Generative AI with Large Language Models
- NVIDIA's Building Transformer-Based Natural Language Processing (NLP) Applications
- IIIT-Hyderabad's Summer School on NLP [Cert.]
- Stanford CS224n: NLP with DL [Course]
- Neural Networks and Deep Learning [Course]
- CS7015: Deep Learning [Course]
- Improving Deep Neural Networks [Course]
- Convolutional Neural Networks [Course]
- Sequence Models [Course]
- Data Structures and Algorithms
- Linear Algebra • Probability Theory

SKILLS

PROGRAMMING LANGUAGES
• Python • C • C++ • MATLAB • Perl (basic)

LIBRARIES
• PyTorch • NumPy • SciPy • Pandas • Keras

SOFTWARE/TOOLS
• Git • Bash • MS Office • Adobe Photoshop
• LaTeX • HuggingFace • **OS:** Windows, Linux

LANGUAGES

Fluent	English, Tamil, Hindi, Telugu
Intermediate	German, Malayalam, Kannada
Elementary	Chinese, Malay, Sanskrit, Arabic

EXTRACURRICULARS

- **Workshop Coordinator:** Organized and volunteered various workshops conducted under IEEE VNIT Student Chapter Nagpur.
- **IvLabs Member:** Core Member of the AI and Robotics Lab of VNIT, Nagpur.
- **Graphic Designer:** Member of the Magazine & Literary Club, VNIT Nagpur.
- **Piano & Music Theory:** Grade 5 - Associated Board of the Royal Schools of Music (ABRSM).

HONORS AND AWARDS

- Awarded the **D&I subsidy** for attending the EMNLP 2022 conference at Abu Dhabi, UAE.
- Selected in the SURGE internship program at **IIT Kanpur** for the year 2022. [Certificate]

EXPERIENCE

RESEARCH INTERN
AI4Bharat, IIT Madras, India (Remote) | July 2023 - Present
- Working on developing LLMs for Indic languages.

RESEARCH INTERN [Project Report] [Presentation]
IIT Kanpur, India (Remote) | May - Aug 2022
- Aimed at solving the task of **Spoken Term Detection** (STD) to retrieve queried speech files in an audio database.
- Implemented three different approaches to STD for query localization, classification and location suggestion in a database.
- Analyzed an optimal combination of the above, in order to work towards building a language-agnostic system.

PUBLICATIONS

1. [Pre-print upcoming] **Large Language Models are legal but they are not: Making the case for a powerful LegalLLM**: *Thanmay Jayakumar, Fauzan Farooqui, Luqman Farooqui* **(NLLP, EMNLP 2023)**
2. [Paper] **Attending to Transforms: A Survey on Transformer based Image Captioning**: *Kshitij Ambilduke, Thanmay Jayakumar, Luqman Farooqui, Himanshu Padole, Anamika Singh.* **(PCEMS 2023)**
3. **[Paper under review]** Enhanced word-embedding models by fusing linguistic structure for Open Information Extraction. **(COLING)**

SELECTED PROJECTS

MULTI-CHOICE QUESTION ANSWERING [GitHub]
IvLabs, VNIT, India | Jul 2023
- Deployed PyTorch's **DistributedDataParallel** and **FullyShardedDataParallel** with the **Hugging Face** Transformers framework for **RoBERTa** on a two-GPU parallelism setup.
- Achieved an accuracy of 85.6% using Sequence (Binary) Classification and 83.6% using Multiclass Classifcation.

IMAGE CAPTIONING [GitHub]
IvLabs, VNIT, India | Jan-Mar 2023
- Surveyed image captioning methods for our thesis titled "Deep Learning techniques for Automatic Image Captioning"
- Investigated captioning models with a **ResNet** image encoder and various decoders in PyTorch using the Flickr caption dataset.
- Examined the model results on **BLEU**, **METEOR** and **ROUGE**.

MACHINE TRANSLATION [GitHub]
IvLabs, VNIT, India | Feb-Jun 2022
- Studied papers presenting novel architectures for NMT.
- Implemented Encoder-Decoder architectures from scratch in PyTorch using the Multi30k Dataset for German-English.
  - Attention Is All You Need [arXiv]
  - NMT by Jointly Learning to Align and Translate [arXiv]
  - Sequence to Sequence Learning with Neural Networks [arXiv]
- **Low-resource NMT (Literature Review):** [Presentation] [Notes]
- **Statistical Machine Translation:** [Presentation]
  "Investigating Effects of Tuning on Different Evaluation Metrics"