KRISH SHARMA

ML/AI ~ Researcher

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SUMMARY

Third-year BTech student with a passion for AI, ML, and mathematics applied fields, seeking opportunities to learn and contribute to the field.

SKILLS

Languages: Python , C++ , Javascript , C , React , Processing

Framework: Langchain , Tensorflow , Pytorch , Keras , Flask.

EDUCATION

5/2018 - 5/2020 **Don Bosco School, Guwahati** — **School**
HSC ; Percentage/CGPA: 87.2

5/2021 - 5/2025 **National Institute of Technology, Silchar** — **College**
Bachelor of Technology - Electronics and Instrumentation Engineering; CGPA: 8.02

EXPERIENCE

5/2023 – 7/23 **Research Intern - Institut de Recherche en Informatique de Toulouse** — **University**
- Making Language Model to learn Mathematical and logical reasoning task
- Paper will be submitted in **ICLR'24** Main conference.

9/2023 – **Research Intern - Carnegie Mellon University** — **University**
- Working on Research project which focuses on building VQA models in bio-medical domain.

2/2023 – 6/23 **Research Intern - Artificial Intelligence Institute at University of South Carolina** — **University**
- Worked on Large Language Models, Ai text detectability techniques, and cross modal entropy relations.
- Paper is accepted at **EMNLP'23** Main conference.

PROJECTS

Research **Detecting Factual Errors via Cross Examination** — **ongoing**
Working on extension of paper LM VS LM with Tel Aviv University. Making Language Model to detect factual errors and mitigate them. Work will be submitted to EMNLP'24.

Research **Making Language Models learn Logics and Maths** — **ongoing**
Working with IRIT Lab Frnace , Making Language Model to learn logical reasoning task. Work will be submitted to ICLR'24.

Hackathon **Segmentation of floods from Aerial Images** — **github.com link**
I worked on a group project to build a system for segmenting out floods from aerial images using the U-Net architecture. I was responsible for building the data pipeline and optimizing the model. We achieved a training IoU score of 0.87 and a validation IoU score of 0.81.This system can be used to help disaster relief organizations and government agencies quickly and accurately identify areas affected by flooding. This information can be used to guide relief efforts and minimize the impact of floods on people and property.

Learn **Tiny GPT** — **github.com link**
I implemented a small-scaled GPT model architecture in PyTorch from scratch as a solo project. I implemented the Multihead Attention mechanism from scratch. I plan to extend the project to include training and inference in the future.

Hackathon **Diagno AI** — **github.com link**
My team built an end-to-end system to classify disease from natural text prompt describing symptoms, using the BERT model. I worked on model building and part of the deployment. I achieved a training accuracy of 98.1 perc and a validation accuracy of 97.6 perc.

Research **ATLANTIS for Efficient Hate Span Detection** — **github.com link**
I built a custom model called ATLANTIS to classify hate spans in sentences. We finished 2nd at HASSOC 23 research challenge (1st stage).

PUBLICATIONS

EMNLP'23 **Counter Turing Test(CT^2): Introducing AI Detectability Index**
We have developed a new benchmark called the Counter Turing Test (CT2) to evaluate the robustness of existing AGTD techniques. We have also proposed the AI Detectability Index (ADI), a quantifiable measure of the detectability of LLM-generated text. This work has been published in EMNLP'23 Main conference, and it has the potential to have a significant impact on the development of AGTD technologies and AI policy-making.
Awarded as the Outstanding Paper at EMNLP 2023

COLING'24 **OpenDebateEvidence: A Massive-Scale Argument Mining and Summarization Dataset** **In Review**

OpenDebateEvidence, an extensive dataset in the field of argumentative summarization and argument mining, surpasses DebateSum by offering over 3.5 million documents with intricate metadata, marking it as one of the most substantial argumentative datasets. The dataset, a superset of DebateSum, is showcased through a debate-bot demo on the Arguflow platform, emphasizing its utility and availability to the public.

IEEE CICT'23 **A transformer-based approach to automated disease prediction from patient descriptions**
We have developed a transformer-based approach for disease prediction using textual symptom descriptions. This approach has the potential to significantly reduce the time and cost of medical diagnosis. I am passionate about using NLP to improve the lives of patients and make healthcare more accessible and affordable.This work has been published in IEEE CICT'23 conference

FIRE'23 **ATLANTIS for Efficient Hate Span Detection**
Developed a model for HateSpan Classification Task with BIO tags. Paper Accepteed at FIRE'23 Conference. Won the HASSOC Workshop with this paper.

AWARDS

12-2023 **Awarded as Outstanding paper at EMNLP 2023.** **Conference**

06-2022 **One of the Best project of Assam Starup Hackathon(Unflood Hack)** **Hackathon**

09-2023 **Runner's Up at HASSOC Research Challenge 23** **Research Challenge**

09-2022 **Runner's Up at Software Hack** **Hackathon**

BLOGS

Understanding Byte Pair Encoding

Byte Pair Encoding (BPE) is a subword tokenization technique that is commonly used in natural language processing (NLP) tasks. BPE works by iteratively merging the most frequent pairs of bytes in a corpus, until a desired vocabulary size is reached. This results in a vocabulary that consists of a mix of whole words and subwords, which is often more effective for NLP tasks than using a vocabulary of whole words alone.

POSITIONS OF RESPONSIBILITY

06-2022 **TA/Moderator, Machine Learning Club** **NIT Silchar**

- Conducted on-site orientation sessions, attracting **500+** students to join the Machine Learning Club.
- Led **weekly classes** on the fundamentals of Machine Learning and Deep Learning for junior members.
- Coordinated **speaker sessions** featuring industry experts, enhancing members' exposure to real-world applications.
- Orchestrated "Neurathon," India's Northeast one of the largest **ML hackathon**, managing end-to-end logistics.

12-2023 **Presented Paper At EMNLP 2023** **EMNLP 2023**

- Paper titled **Counter Turing Test CT2: AI-Generated Text Detection is Not as Easy as You May Think – Introducing AI Detectability Index** has won Outstanding award at **Emnlp 2023**