ADITYA PARASHAR

Amherst, Massachusetts
(+1)413-404-2525 ⋄ linkedin.com/in/adityaparashar501/⋄ aparashar@umass.edu

EDUCATION

University of Massachusetts, Amherst *2023 - Present*
MS, Computer Science **-**
Courses: *Advanced NLP ,Reinforcement Learning, Applied Information Retrieval, Machine Learning*

Indian Institute of Technology(IIT), Guwahati *2014 - 2018*
B.Tech, Mechanical Engineering(Minor in Mathematics) **7.31**
Courses: *Computational Fluid Dynamics, Scientific Computing, Mathematical Statistics*

RESEARCH EXPERIENCE

UMass BioNLP lab *June 2023 - Present*
Graduate Student Researcher, Prof. Hong Yu *git repo*

- **USMLE (US Medical Licensing Examination) Question generation** :
  - Engineered a USMLE question generation system using a **self-refining** LLM(GPT-3+) based framework.
  - Incorporated in context learning using clinical notes and a question bank into the prompts. Integrated a self-feedback loop with fine-grained feedback rubrics for iterative improvement.

UMass NLP lab *May 2023 - Present*
Graduate Student Researcher, Prof. Rajesh Bhatt & Yixiao Song

- **HiMPLI (Hindi Minimal Pairs for Linguistic Investigation of LLMs)** :
  - Building a benchmark dataset for evaluating the level of linguistic knowledge encoded in LLMs, consisting of minimal pairs targeting various linguistic phenomena in the Hindi language.

Language Technology Research Centre, IIIT-Hyderabad *March 2022 - January 2023*
Research Intern, with the guidance of Dr. Sukhada, IIT BHU *git repo*

- Worked on interlingua-based machine translation for Indian languages under the National Language Translation Mission, Government of India, involving the development of language-independent Universal Semantics Representation (**USR**) datasets from Hindi sentences.
- Collaborated with linguists to develop algorithms for USR graph linearization, enhancing **LLM (MT5 and BART) finetuning** for sentence generation.
- Strengthened LLMs through fine-tuning, focusing on predicting postpositions in Hindi sentences and constructing minimum recursion semantics (MRS) dictionaries for Indian languages by parsing bilingual data from diverse sources.

WORK EXPERIENCE

Agility E Services, Hyderabad *July 2018 - Sept 2022*
Software Engineer(Technology Specialist)

- **IPaaS** : Developed an on-demand multi-tenant cloud integration platform(**IPaaS**) for connecting cloud, on-premises applications, and data.
  - Implemented **security** features like role based access to the application, and secured **Azure** services like service bus, PostgreSQL server, and app services of the IPaaS using **Microsoft Sentinel**.
  - Independently built a **windows installer** package with user-customizable settings for installing a windows service responsible for scheduling and locally executing the on-premises jobs configured in the IPaaS web studio.
- Worked on the development of an inventory purchase and order management web application following the distributed **microservices** architecture and **CQRS** design pattern, in sync with a cross-functional agile team while adhering to **CI/CD** practices.

Linguistics Justice League *July - September 2022*
Volunteer

- Developed a Computer-assisted language(English) learning (CALL) platform for low-resource languages like Pashto, Somali, and Ukrainian. Intended for refugees and immigrants in the United States.

ACADEMIC PROJECTS

Improving open-source LLM generation using decoding-time strategies *Fall '23*
Independent Study with Prof. Andrew Mccallum

- Working on a inverse consistency based task-agnostic, decoding-time strategy to decrease the performance gap between open source LLM and their closed counterparts.

Interpreting figurative language using prompting *Spring '23*
Adv. NLP course project, Prof. Mohit Iyyer *git repo*

- Leveraged different prompting strategies to get better literal translations for figurative language texts, specifically Metaphor, Idiom, Simile and Sarcasm
- Used zero-shot prompting as our baseline and then tested few-shot prompting, instruction prompting and chain of thought prompting to compare performances across these strategies. x

TECHNICAL SKILLS

Programming Languages	Python, C# , Java, Typescript, Javascript, SQL
ML & Dev Frameworks	numpy, Pytorch, Huggingface, Angular, .NET Core, Xamarin Forms