RESUME

DEBRUP DAS

UMASS CS PHD

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EDUCATION

Indian Institute of Technology Kharagpur

Mathematics and Computing

Integrated Master of Science 5 year (2019-2024)

GPA: 9.01/10 ~ 3.82/4 [Scholaro GPA]

ACADEMIC COURSEWORK

- Natural Language Processing
- Information Retrieval
- Machine Learning

LINKS

- Project Portfolio and Bio
- Github Profile

BIOGRAPHY

I am a 5th year Dual Degree student of Mathematics and Computing at IIT Kharagpur, India. I work in Tr^2AL Lab under Prof Somak Aditya, in the domain of neuro-symbolic conversational AI systems.

WORK EXPERIENCE

Language and Speech Team, Rakuten India (May 2023 - Dec 2023)

Supervised by Dr Somak Aditya, Dr Ashish Kulkarni

- Conducted research with the MATH dataset to analyze the ability of large language models (LLMs) in mathematical reasoning tasks.
- Looked at tool augmented LLMs to solve complex math.
- API's such as Wolfram Alpha, Bing Search integrated with LLMs.
- Planning methods with tool-augmented LLMs.

Research Intern, McGill University (May 2022 - Dec 2022)

Supervised by Dr Simon Gravel

- Conducted research in the domain of statistical population genetics using the BALSAC genealogy of Quebec.
- Worked to detect rare disease causing variants in the above population-scale genealogies.
- Used pre-existing methods like Monte Carlo to simulate the inheritance paths in the genealogy.
- Successfully deployed analytic pipeline for modeling mendelian diseases with incomplete penetrance by performing hypothesis testing.

Student Researcher, Microsoft Accelerating AI Research Program (June 2023 - Present)

Supervised by Prof Somak Aditya and Dr Monojit Choudhury

- Framework for quantifiying the sensitivity of LLMs to different parts of a prompt for jailbreak.
- Quantifiying the bias of OpenAI models to certain words and use these features for mitigation.
- Human and automatic evaluation of the framework.

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TOEFL ENGLISH (112/120)

- Speaking 30/30
- Reading: 29/30
- Listening : 27/30
- Writing: 26/30

PROGRAMMING LANGUAGES

- Python
- R
- Matlab
- C++
- SQL

EXTRACURRICULAR ACTIVITIES

Member of Chess Team, IIT Kharagpur
Member of National Social Service Scheme (NSS India)

Student Researcher , Neuro-Symbolic AI under Probabilistic Logical Reasoning Frameworks (June 2023 - Present)

Supervised by Prof Somak Aditya

- Remove essential data from the input in datasets like FOLIO, PRONTOQA, etc to mimic incomplete knowledge situations.
- Retrieve this incomplete information by leveraging retrieval from knowledge bases in symbolic form.
- Assign confidence scores on the retrieved knowledge and represent them in probabilistic logic languages.
- Integrate neural architectures with logic programs using DeepProbLog to get best of both worlds.

Research Intern, Dr Nirupam Chakraborti, Czech Technical University (May 2021 - Dec 2021)

Supervised by Dr Nirupam Chakraborti

- Perform deep learning using subnets of trees.
- Using nature inspired Predator-prey algorithm and genetic operators to explore the search space of architectures.
- Perform multi-objective optimization on both the size of model and RMSE error.

ACHIEVEMENTS

1. Recipient of MITACS Globalink Research Scholarship
2. Gold Medal, National Social Service Scheme India (NSS)

CERTIFICATIONS

1. Prompt Engineering for Developers by deeplearning.ai
2. Machine Learning Stanford University by Andrew Ng
3. Deep Learning by deeplearning.ai
4. Python for Everybody specialisation, University of Michigan
5. Statistical thinking in Python by DataCamp