

Chandrabhas

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Summary

I am broadly interested in information extraction and generative large language models. My past research focused on analysing and improving KG completion methods and their application on densifying Open KGs extracted from a text corpus. I also worked on modular language models that can separate volatile world knowledge from invariant linguistic knowledge, enabling easier model adaptation with changing world facts. Currently, I am working on methods for product information extraction from noisy unstructured or semi-structured sources.

Interests

Knowledge Graphs, Language Models, Natural Language Understanding, Machine Learning, Model Interpretability.

Work Experience

Amazon

Bangalore, India

APPLIED SCIENTIST

Oct. 2022 - Present

- Working on Product Information (e.g., product attributes) Extraction using generative large language models.
- The work involves developing prompting and fine-tuned LLM-based attribute extraction approaches, evaluation mechanisms, and deploying the model at scale.

Google Research

Bangalore, India

VISITING RESEARCHER

Sep. 2021 - Oct. 2022

- Worked on developing large language models that work well on knowledge-intensive tasks.

Facebook

London, UK

INTERN

Sep. 2018 - Nov. 2018

- Worked on search query recommendation improving user engagement.
- Proposed a graph-based method for query recommendation which improved user engagement on the search result page.

IBM Research Lab

Bangalore, India

RESEARCH INTERN

Jun. 2016 - Aug. 2016

- Worked on Task Specific Knowledge Graph (KG) Construction methods where the final structure of KG is determined by an end task.

Veveo R&D, Rovi Corporation

Bangalore, India

SOFTWARE ENGINEER

Aug. 2013 - Jul. 2015

- Worked on conversation-based search on entertainment domain.
- It involved problems such as user intent detection, dialog detection, and context management during natural language conversation.

Education

Indian Institute of Science, Bangalore

Aug. 2015 - Jul. 2021

PH.D. COMPUTER SCIENCE AND ENGINEERING - ADVISED BY **PROF. PARTHA PRATIM TALUKDAR**

CGPA - 7.0/8.0

Thesis - Analysis and Methods for Knowledge Graph Embeddings

Indian Institute of Science, Bangalore

Aug. 2011 - Jul. 2013

M.E. COMPUTER SCIENCE AND ENGINEERING - ADVISED BY **PROF. SHIVANI AGARWAL**

CGPA - 6.7/8.0

Thesis - Learning Score Systems for Predicting Patient Mortality in ICUs

Bhilai Institute of Science, Durg

Aug. 2007 - Jun. 2011

B.E. COMPUTER SCIENCE AND ENGINEERING

CGPA - 8.8/10.0

Final Year Project - Expert Examination System: An automated question paper generation system

Publications

- Chandrabhas, Partha Pratim Talukdar. *OKGIT: Open Knowledge Graph Link Prediction with Implicit Types*, Findings of the ACL: ACL-IJCNLP 2021.
- Chandrabhas, Tathagata Sengupta, Cibi Pragadeesh, Partha Pratim Talukdar. *Inducing Interpretability in Knowledge Graph Embeddings*, ICON 2020.
- Chandrabhas, Nilesch Agrawal, Partha Pratim Talukdar. *Learning to Interact: An Adaptive Interaction Framework for Knowledge Graph Embeddings*, ICON 2020.
- Chandrabhas, Aditya Sharma, Partha Pratim Talukdar. *Towards Understanding the Geometry of Knowledge Graph Embeddings*, ACL 2018.
- Srinivas Ravishankar, Chandrabhas, Partha Pratim Talukdar. *Revisiting Simple Neural Networks for Learning Representations of Knowledge Graphs*, AKBC 2017.

6. Aadirupa Saha, Chandrahas, Harikrishna Narasimhan, Sriram Sampath, Shivani Agarwal. *Learning Score Systems for Predicting Patient Mortality in ICUs via Orthogonal Matching Pursuit*, ICMLA 2014.

Skills

Programming Languages	Python, C, C++, Java, Shell Scripting, \LaTeX
ML/DL/NLP Frameworks	PyTorch, TensorFlow, HuggingFace, NumPy, SciPy
Web Development	HTML, CSS, JavaScript, Python-Flask, Jinja2, Bootstrap, JQuery
Applications	Vi/Vim, Visual Studio Code, Git, MongoDB
Operating Systems	Linux, Mac OSX, Windows, Android
Spoken Languages	English (fluent), Hindi (native tongue)

Positions of Responsibility

- **Reviewer** for EMNLP 2022, EMNLP 2021, NAACL 2021, AKBC 2021, EMNLP 2020, and ICON 2020.
- **Teaching Assistant** for UGE-101 (Algorithms and Programming) Course.
- **Student Volunteer** for EMNLP 2020, ACL 2018 and 2020.
- **Publicity Team Lead** for the department (CSA) Open-days 2016, 2013, and CSA Summer School 2013.

Projects

- **Product Information Extraction:** Extracting product attributes from unstructured or semi-structured sources is an essential task in the e-commerce domain. It improves downstream tasks such as new product listing or product search using enriched existing listings. In this project, we worked on developing methods for automated product attribute extraction. The work involved developing prompting and fine-tuned LLM-based methods for attribute extraction, evaluation mechanisms, and model deployment at scale.
- **Search Query Recommendation:** Providing related search queries can enhance user experience on search result pages. In this project, we worked on finding related queries for an input query. We developed and deployed a graph-based method that resulted in increased user engagement on search result pages.
- **Conversation-based Search:** A conversation-based interface for devices (e.g., smart TVs) enhances the user experience in content discovery. In this project, we worked on user intent detection in search queries, dialog detection, and context management. We developed a template and classification-based approaches for these tasks that were deployed to smart set-top boxes.
- **Study of Parallel Coordinate Descent Algorithms:** Coordinate Descent Algorithms form a class of simple optimization algorithms that have received the attention of many researchers in the last decade. There have been significant advancements in adapting these algorithms in parallel (multi-core) settings. In this project, we focused on studying parallel versions of Coordinate Descent Algorithms. We also implemented and conducted experiments with some of these algorithms. [Code].
- **Entity Linking:** Entity linking (EL) is a process of mapping textual mentions of named entities in text to an entity in some knowledge base. EL is used in numerous areas of natural language processing to automate structured information retrieval from raw corpus. In this project, we focused on D2W (Disambiguation to Wikipedia) task, where we map textual mentions to corresponding Wikipedia pages. Specifically, we studied the effects of co-reference resolution (using Stanford CoreNLP) on the performance of the Wikifier system for D2W task.

Awards and Achievements

- Received **Google Travel Grant** for attending ACL 2018.
- Received **Special Recognition Award** while working at Veveo R&D.
- Secured **All-India Rank 44** in GATE-2011.
- Secured **Honors** in Bachelor of Engineering.
- Received **Certificate of Excellence in Mathematics** in Higher Secondary (12th).

Extra Curricular Activities

- **Hobbies:** Playing Guitar, Keyboard, and Drums, Board Games.
- **Sports:** Swimming, Badminton, Table Tennis.

References

1. Dr. **Partha Pratim Talukdar** (Staff Research Scientist, Google Research India), partha@google.com.
2. Dr. **Pradeep Shenoy** (Researcher, Google Research India), shenoypradeep@google.com.
3. **Ahmed Nizam Mohaideen** (Senior Software Engineer, Google India), nizamsp@google.com.
4. Dr. **Harikrishna Narasimhan** (Senior Research Scientist, Google Research Mountain View), hparasimhan@google.com.
5. Prof. **Shivani Agarwal** (Associate Professor, University of Pennsylvania), ashivani@seas.upenn.edu.