Kaushal Kumar Maurya

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Research Statement : The grand avid goal of my research is to enable seamless multilingual human-machine communication and democratize NLP technologies. As a multilingual myself, I perceive a pressing need for the development of cross-lingual/multilingual models that can facilitate a range of end-user applications in low-resource languages. In this regard, my research trajectory is primarily geared toward the development of novel models that can enable technology for low-resource languages that have limited or no data. My approach to addressing these issues is largely rooted in the linguistic perspective. In particular, my Ph.D. research focuses on anchoring three narrative properties, namely (1) language structure, (2) context, and (3) transferability from/to diverse typological languages. I believe that the aforementioned endeavors are a pivotal stride in the direction of accomplishing my research objective.

Research Interests

Natural Language Generation, Cross-lingual Transfer, Multilingual,Question Answering, Trustworthy NLP

Education

2023 (Expected) **Indian Institute of Technology Hyderabad, Ph.D. in Computer Science and Engineering**
2017 **SCIS, University of Hyderabad, Masters in Artificial Intelligence**
2014 **KNMIET, UPTU, Bachelors in Computer Science and Engineering**

Publications

Theses

- **Ph.D. Thesis Proposal :** Low-Resource Language Generation with Limited Supervision
- **Masters Thesis :** The Study of Machine Translation Evaluation

Conferences

- **Kaushal Kumar Maurya**, Rahul Kejriwal, Maunendra Sankar Desarkar, Anoop Kunchukuttan, "Utilizing Lexical Similarity to Enable Zero-Shot Machine Translation for Extremely Low-resource Languages" (submitted, under review) [Paper]
- Venkatesh E, **Kaushal Kumar Maurya**, Deepak Kumar, Maunendra Sankar Desarkar, "DIVHSK : Diverse Headline Generation using Self-Attention based Keyword Selection" Accepted at Findings of ACL 2023.
- **Kaushal Kumar Maurya**, Maunendra Sankar Desarkar, "Meta-XNLG : A Meta-Learning Approach Based on Language Clustering for Zero-Shot Cross-Lingual Transfer and Generation" at Findings of ACL 2022. [Paper].
- Kamal Shrestha, Aditi Sanjay Bagora, **Kaushal Kumar Maurya**, Maunendra Sankar Desarkar, "Hostility Detection in Online Hindi-English code-mixed Conversations" at WebSci 2022. [Paper].
- **Kaushal Kumar Maurya**, Maunendra Sankar Desarkar, Yoshinobu Kano, Kumari Deepshikha, "ZmBART : An Unsupervised Cross-lingual Transfer Framework for Language Generation" at Findings of ACL 2021. [Paper].
- **Kaushal Kumar Maurya**, Maunendra Sankar Desarkar, "Learning to Distract : A Hierarchical Multi-Decoder Network for Automated Generation of Long Distractors for Multiple-Choice Questions for Reading Comprehension" at CIKM 2020. [Paper].
- **Kaushal Kumar Maurya**, Renjith P. Ravindran, Ch Ram Anirudh, Kavi Narayana Murthy, "Machine Translation Evaluation : Manual Versus Automatic—A Comparative Study" at DECT 2020. [Paper].

Journals

- **Kumar Kumar Maurya**, Ashutosh Tiwari, Maunendra Sankar Desarkar, Manish Gupta, "ECoAdapters : Efficient Multilingual Controlled Text Generation with Adapters" (submitted, under review)
- **Kumar Kumar Maurya**, Maunendra Sankar Desarkar, Manish Gupta and Puneet Agrawal, "Trie-NLG : Trie Context Augmentation to Improve Personalized Query Auto-Completion for Short and Unseen Prefixes" (submitted, under review)
- Sreekanth Madisetty, **Kaushal Kumar Maurya**, Akiko Aizawa, Maunendra Sankar Desarkar "A Neural Approach for Detecting Inline Mathematical Expressions from Scientific Documents" at Expert Systems 2020. [Paper].

Workshop

- Arkadipta De, Venkatesh E, **Kaushal Kumar Maurya**, Maunendra Sankar Desarkar, "Coarse and Fine-Grained Hostility Detection in Hindi Posts using Fine Tuned Multilingual Embeddings" at CONSTRAINT workshop, AAAI 2021. [Paper]. Shared task best paper Honorable Mention.

Professional Engagements

Experience

Data Scientist, Ntwist, CIE, IIITH, Hyderabad, India, July 2017 - March 2018
- Optimization and automation of Gas-plant production by leveraging Deep Reinforcement Learning. Correlation study of attributes in higher dimension

Internships

Microsoft India (R&D), August 2022 - December 2022
Topic : Machine Translation for Extremely Low Resource Languages/Dialects
- Proposed novel MT system for extremely low-resource languages (LRLs) and dialects by exploiting lexical similarity with closely related high-resource languages

Microsoft India (R&D), June 2021 - July 2021
Topic : Personalized Auto-suggest Text generation for Bing Search Engine
- Augmentation of trie suggestions/completions in NLG model for personalized auto-suggestion task for Bing Search Engine

Nvidia AI Research Center, India and Shizuoka University, Japan, May 2020 - January 2021
Topic : Towards Cross-lingual Transfer and Generation for Indian Languages
- Proposed an unsupervised cross-lingual generation framework, ZmBART, to transfer supervision from high resource language to multiple low resource languages

Collaboration

Microsoft India (R&D), Academic Grant, July 2021 - June 2023
Topic : Non-toxic Multilingual Personalized Auto-suggest Generation
- Improving the quality of auto-suggestions for BING Search Engine
- Overcoming problematic/toxic auto-suggestions for BING Search Engine
- Enabling auto-suggest generation in low-resource languages with limited supervision

Startup Advisor

Technical Advisor at Lending Katalyst [AI-NLP Startup in Legal Domain] , February 2022- Present
- Provide AI/NLP-oriented solutions for real-world use cases in the legal domain
- The problems are interdisciplinary in nature involving NLP, multilingual, legal domain and linguistic

Invited Talks

KG Reddy College at Hyderabad, India hosted by Swechha Foundation (NGO), April 2023
- Topic : Introduction Artificial Intelligence and NLP

SCIS, University of Hyderabad, India, April 2022
- Topic : Introduction to Deep-Learning through lenses of Natural Language Process

SVECW College, Bhimavaram, AP, India, December 2021
- Topic : Introduction to Deep Learning for Natural Language Processing [100+ participants]

ASIC, NLP Reading and Discussion Group, May 2021
- Topic : An Unsupervised Cross-lingual Transfer Framework for Language Generation

Faculty Development Program on Data Science, Hyderabad, India, December 2020
- Topic : Introduction to RNN, Data Processing and Text Classification

ACM IIT Hyderabad Student Chapter, November 2020
- Topic : Learning to Distract : Generation of incorrect options from Reading Comprehension MCQ

Research Services

Organizer	One-day workshop on “Sara Translator and Recent Trends in NLP”, SCIS, UOH
Organizer	One-day NLP meet on “Large-scale Human Evaluation for India Languages”, SCIS, UOH
Conference Reviewer	ACL [2021-23], EMNLP [2021-22], ARR, AAAI [2021-22], ICLR 2021, SIGTYP 2021 and MLR 2021
Student Volunteer	ACL [2020, 21, 22 (in-person)], EMNLP [2020-22], ICLR [2020-21], NeurIPS [2020-22], NAACL [2021-22], CIKM 2021 and ACML 2022 (in-person)
Student Lead Volunteer	EMNLP 2022 and ACML 2022
Conference Participant	ACL [2020, 21, 22 (in-person)], EMNLP [2020-22], CoDS-COMAD [2020 (in-person), 2021-23], ICLR [2020-21], NeurIPS [2020-22], NAACL [2021-22], CIKM 2021 and ACML 2022 (in-person)

Academic Honors & Awards

- Received a grant of 100K INR for attending the conference by IIT Hyderabad in the **Exceptional Research Scholar** category, 2022
- Shared task **best paper honorable mention** for our CONSTRAINT workshop of AAAI 2021 paper. [Link]
- **Microsoft and ACL Travel Grant 2022 :** Received travel grants to present our Meta-XNLG work in ACL 2022 in Dublin, Ireland
- Our **ZmBART** and **Meta-XNLG** papers are recognized as the **premier papers** from India by IKDD-ACM India. [Link]

- Received **Student Travel Grant** to attend CODS-COMAD 2022 and 2023
- Received **fully-funded summer school offers** from Oxford University ML Summer School 2021, 2022 and 2023
- Hybrid infrastructure (Airmeet) **head** for the ACML conference 2022
- **ACM SIGIR and ACM India-IARCS Grant 2020 :** Received to present our CIKM 2020 work
- **Suzuki Foundation Fellowship 2020 & 2021 :** Fully funded visit to Shizuoka University, Japan, for a short research stay
- **BBC & IITG Hackathon :** Received a fully paid trip for a Hackathon in Google office Gurugram, India by BBC India and IITG
- Participated in **Google India Hackathon** at the Hyderabad office in 2018
- **University of Tokyo and IITH workshop 2018 :** Secured **second place** in the workshop (shared task) at IIT Hyderabad
- 2014, 2015, and 2016 GATE qualified with **95+** percentile
- In high school, secured **second place** in Ballia district, Utter Pradesh, India
- **Winning caption** of National Cadet Corps (NCC) in 8th grade. 5mm

Teaching Assistantship and Mentorship

- Took **lectures/hands-on sessions** in the NLP/IR Course at IITH during 2020-2023
- **TA at IITH :** NLP & IR (Spring'23, 45+ students), Information Retrieval (Fall'21, 25+ students), NLP (Spring'21, 110+ students), IR (Fall'20, 60+ students), NLP (Spring'20, 45+ students), IR (Fall'19, 30+ students) and Algorithm (Spring'19, 120+ students)
- **TA at UoH :** NLP (Fall'16, 20+ students) and Optimization Technique (Spring'17, 55+ students)
- **Project Mentor at IITH :** NLP & IR (Spring'23, mentored 4 groups), IR (Fall'21, mentored 7 groups), IR (Fall'20, mentored 8 groups), NLP (Summar'20, mentored 4 groups), and NLP (Winter'19, mentored 2 Groups)
- Work on **Diverse Headline Generation** with Venkatesh E (MTech-TA at IITH) is submitted and under review
- Work on **Hostility Detection code-mixed Conversations** with Kamal Shrestha, Aditi Sanjay Bagora (MTech-TA students at IITH) is published at WebSci 2022
- Work on **Coarse and Fine-Grained Hostility Detection** with Arkadipta De, Venkatesh E, (MTech-TA students at IITH) is published at CONSTRAINT workshop

Languages

Hindi	●●●●●
English	●●●●●
Bhojpuri	●●●●●
Japanese	●●○○○

Interests

- Love : Traveling, Reading, and Playing Strategic Games
- Sports : Cricket and Tennis