Saujas Vaduguru

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Education

2017– **B.Tech. in Computer Science** and **M.S. (by Research) in Computational Linguistics**
International Institute of Information Technology, Hyderabad GPA: *9.49/10*

Research Experience

2019– **Undergraduate Researcher**, Language Technologies Research Center, *IIIT, Hyderabad*
ADVISORS: Monojit Choudhury, Dipti Misra Sharma

May–Aug 2021 **Research Intern**, Chandar Research Lab, MILA
ADVISORS: Sarath Chandar, Prasanna Parthasarathi

Publications

Papers

2021 ***Stress Rules from Surface Forms: Experiments with Program Synthesis***
Saujas Vaduguru, Partho Sarthi, Monojit Choudhury, and Dipti Sharma
Submitted to *International Conference on Natural Language Processing (ICON)*

2021 ***Sample-efficient linguistic generalizations through program synthesis: Experiments with phonology problems***
Saujas Vaduguru, Aalok Sathe, Monojit Choudhury, and Dipti Sharma
In *Proceedings of the 18th SIGMORPHON Workshop on Computational Research in Phonetics, Phonology, and Morphology* [paper] [data]

Posters and talks

2021 ***Efficient Pragmatic Program Synthesis with Informative Specifications***
Saujas Vaduguru, Yewen Pu, Kevin Ellis
In *NeurIPS 2021 Workshop on Meaning in Context: Pragmatic Communication in Humans and Machines* ***(oral presentation)*** [paper] [code]

Honours and Awards

2021 MITACS Globalink Research Internship

2020–2021 Dean's Merit List Award for Academic Performance (top 30% of cohort)

2019–2020 Dean's List Award for Academic Performance (top 10% of cohort)

2018–2019 Dean's Merit List Award for Academic Performance (top 20% of cohort)

2017–2018 Dean's List Award for Academic Performance (top 10% of cohort)

2015 Honourable Mention, International Linguistics Olympiad

last updated: November 10, 2021

Research Projects

2021– **Semantics of imperatives in neural language models**
MENTORS: Prasanna Parthasarathi, Xingdi Yuan, Marc-Alexandre Côté, Sarath Chandar

- Probing for meaning representations of imperative statements in neural language models

2021– **Program synthesis with pragmatic communication**
MENTORS: Yewen Pu, Kevin Ellis

- Worked on a pragmatic program synthesizer based on the Rational Speech Acts framework
- Used a mean-field approximation to solve the pragmatic inference problem more efficiently

2021 **Slot-incremental continual learning for dialogue**
MENTORS: Prasanna Parthasarathi, Sarath Chandar, Chinnadhurai Sankar

- Set up continual learning problems in dialogue state tracking where new slots to be tracked for the same dialogue domain are presented over time
- Finetuned Transformer-based models in a continual manner
- Experimented with continual learning methods such as replay and Task-based Adaptive Gradients

2019–2021 **Program synthesis for phonology problems**
MENTORS: Monojit Choudhury, Dipti Misra Sharma

- Developed program synthesis methods to learn rules to solve phonology problems from Linguistics Olympiads
- Adapted program synthesis methods for learning string transformations
- Experimented with a set of problems spanning phenomena including morphophonology, transliteration, and multilinguality

2019–2021 **Program synthesis for phonological stress placement**
MENTORS: Monojit Choudhury, Dipti Misra Sharma

- Developed program synthesis methods to learn rules for phonological stress placement from a small number of examples
- Designed various domain-specific languages to compare impact of specifying linguistic knowledge explicitly

Teaching Experience

2020 **Computational Linguistics I**
INSTRUCTOR: Dipti Misra Sharma

- Course introducing computational methods in phonology, morphology, and syntax
- Designed and graded new assignments, incorporating toy problems designed for exposition of concepts, as well as programming assignments inspired by research papers
- Taught tutorial sessions

Service

Pāṇini Linguistics Olympiad

- Co-chair of Problem Committee and Jury, and member of the Organizing Committee for the Indian national Linguistics Olympiad program from 2018–2021
- Team leader and coach for Indian team at the International Linguistics Olympiad in 2018, 2019, and 2021
- Lecturer at Joint Asian-Pacific Linguistics Training, 2021

Skills

Languages Python, C, C#, JavaScript, C++, LaTeX

Frameworks PyTorch, PyTorch Lightning, HuggingFace Transformers, Scikit-learn, Microsoft PROSE SDK, Flask, OpenNMT-py

Selected Course Projects

Monsoon 2020 **Wikipedia Search Engine**, *Information Retrieval and Extraction*
FACULTY: Vasudeva Varma

Spring 2020 **Incorporating Dependency Syntax Into Transformer-based Neural Machine Translation**, *Natural Language Processing Applications*
FACULTY: Manish Shrivastava

Spring 2020 **Interpreting neural NLP models with language processing in the brain**, *Introduction to Neural and Cognitive Modelling*
FACULTY: Bapi Raju S.

Monsoon 2019 **Discourse-based Sentence Representations for Hindi**, *Natural Language Processing*
FACULTY: Manish Shrivastava

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