Ruhi Umesh Mahadeshwar

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Professional Summary

First year PhD student at Rijksuniversiteit Groningen working under the HAICu project. Ample experience in machine learning, deep learning, reinforcement learning, deep reinforcement learning, natural language processing and computational linguistics. Experienced in inter-disciplinary collaboration, communication of scientific results to technical and non-technical persons, and academic writing.

Education

University of Groningen Groningen, The Netherlands
PhD Candidate in the Computational Linguistics group February 2025 - Ongoing

Working on the NWA-ORC 2022 funded HAICu project. Supervised by prof. dr. Malvina Nissim, dr. Andreas van Cranenburgh and dr. Tommaso Caselli. Researching on how to develop adaptive text understanding models in a neuro-symbolic manner thorough transfer learning of large language models and knowledge injection using existing ontologies and knowledge graphs to help towards reconstructing and recovering lost perspectives which are under-represented or marginalized in Dutch cultural history.

University of Groningen Groningen, The Netherlands
MSc (Cum Laude) in Artificial Intelligence. Average: 8.5 September 2022 - October 2024

Specialization in Multi-Agent Systems. Focused topics include natural language processing, deep learning, machine learning, statistical modeling and cognitive modeling.

Thesis Topic: Reconstructing non-fluent aphasic speech using large language models: The role of simulation to make more of little aphasic data.

Thesis content: Focusing on creating and validating a synthetic dataset of agrammatic and non-fluent aphasic speech by augmenting a speech dataset. Then, evaluate the ability of decoder-only transformer model to reconstruct non-fluent aphasic speech by using the synthetic dataset. Then, use explainable AI and human feedback through questionnaire to infer if reconstructions are sensible.

Supervisors: dr. Frank Tsiwah, Faculty of Arts, University of Groningen and dr. Tsegaye M. Tashu, Faculty of Science and Engineering, University of Groningen.

University of Groningen Groningen, The Netherlands
BSc in Artificial Intelligence. Average: 7.7 September 2019 - July 2022

Topic covered include data science, machine learning, deep learning, logic, cognitive psychology, linguistics, computer vision, robotics and natural language processing.

Thesis topic: Predicting interference effects for the processing of subject-verb agreement in comprehension in Marathi.

Thesis content: Focusing on ACT-R-based model of sentence processing to predict the magnitude of agreement attraction effects for subject-verb agreement in the Marathi language.

Supervisor: dr. Stephen Jones, Faculty of Science and Engineering, University of Groningen.

Research Experience

University of Groningen Groningen, The Netherlands
Exploratory research in classifying fluent aphasia February 2024 - July 2024

- In collaboration with dr. Frank Tsiwah, Faculty of Arts, University of Groningen.
- My contributions include processing data from AphasiaBank, using CLAN software to extract spontaneous speech characteristics, training large language models and evaluating them for classification task, and, using explainable AI to interpret the model.
- Goal is to use an interpretability model to dissect how the model classifies fluent aphasia groups.
- Accepted conference presentation at the 62nd Annual Meeting of the Academy of Aphasia in Nara, Japan.

Work Experience

Nimble Institute B.V. Friesland, The Netherlands
Artificial Intelligence Expert (Part-time) April 2021 - January 2025

- Providing business solutions to clients which incorporate artificial intelligence.
- Previous solutions include:
  - Optical character recognition of data from legal documents of varying formats and cross checking with legal requirements for EU Food and Agricultural Import Regulations for COFCO International.
  - Human pose estimation using large human pose dataset to train YOLOv8 through AzureML for workplace safety in construction setting.
- Working in groups of 3-10 internal technical professionals and external non-technical consumers.

Groningen Indian Students Association (GISA) Groningen, The Netherlands
Digital Designer (Part-time) September 2020 - September 2021

- Voluntary work on upkeeping the GISA page and designing the montly newsletter *Raahi*.
- Job description included creating relevant content to the student association, retaining social media presence and distributing information to members of GISA in timely manner.

Volunteer at Seva Sahayog Foundation Mumbai, India
Student Volunteer (Part-time) February 2018 - February 2019

- Voluntary work on teaching kids from low socio-economic backgrounds various topics such as Physics, Maths, English and Computer Science.
- Job description included explaining basic concepts of topics to children in their native language, give out homework and grade homework.

Skills

Technical: Python, Java, C++, R, MATLAB, Git, Gazebo, ROS, NetLogo, Praat, SPARQL, RDF, and ACT-R. Experienced in python libraries such as huggingface, matplotlib, nltk, numpy, OpenCV, pandas, pytorch, regex, rl-zoo, scikit-learn, seaborn, spaCy, stable-baselines3, and tensorflow. Experienced on working with high-performance computing clusters such as Hábrók.

Language: Marathi (Native), Hindi (Native), English (Native), Dutch (B1) and Spanish (A2).