

Mohammad ‘Sanad’ Zaki Rizvi

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EDUCATION

- **The University of Edinburgh** U.K.
M.S. (Thesis) in Speech and Language Processing (NLP and AI) Sep. 2022 - 2024
- **Visvesvaraya Technological University** India
B.E. in Computer Science and Engineering Aug. 2014 - 2018

EXPERIENCE

- **The University of Edinburgh** Edinburgh, UK
Graduate Student Researcher Advisor: [Dr. Pasquale Minervini](#) Jul. 2023 - Sep. 2024
 - **Factual and Faithful Reasoning with LLMs**: Devised methods to mitigate hallucination and improve reasoning in Large Language Models. Worked with **RAG**, CoT and Contrastive decoding techniques.
- **Google Research India** Bangalore, India
Research Engineer (Consultant) Advisor: [Dr. Partha Talukdar](#) Aug. 2021 - Aug. 2022
 - **Entity-Aware Speech Translation**: Cross-lingual video access, entity-aware and neural speech translation techniques for Indian/Low-resource languages.
- **Microsoft Research India** Bangalore, India
NLP Research Engineer (Consultant) Advisor: [Dr. Monojit Choudhury](#) Apr. 2020 - Jul. 2021
 - **Language Identification of Code-Mixed Text**: Developed an **open-source** tool for word-level language identification in code-mixed text. The tool and model for Hindi-English language pair has been released by Microsoft. [\[Link\]](#)
 - **Code-mixed Text Generator**: Led development of a framework for automated generation of code-mixed data, given parallel sentences for any two language pairs. The work solves issue of lack of training data for **low-resource languages** and was accepted at **EACL, 2021**. [\[Link\]](#)
 - **Teams App for Mental Health - Microsoft Hackathon**: Developed a **chatbot** on Microsoft Teams for assisting people with **mental health** issues in the workplace. The app is in the process of being deployed for employees.
 - **INMT-Lite**: Assisted in developing the framework that enables training **resource-efficient** neural translation models capable of running on embedded devices like mobiles, tablets using TensorFlow Lite. [\[Link\]](#)
- **Analytics Vidhya** Gurgaon, India
Data Scientist Jan. 2019 - Apr. 2020
 - **Natural Language Processing using Python**: Co-Instructor for the MOOC, Taught Deep Learning techniques for NLP like LSTM, GRU, [Language Modelling](#), Transformers and **BERT**. [\[Course Link\]](#)
 - **Natural Language Generation**: Worked with **HuggingFace**'s transformers to implement SOTA models like **GPT-2** and **BERT** for natural language generation. [\[Link\]](#)
 - **Human Pose Detection**: Built a human pose detector in the browser using **TensorflowJS**. [\[Link\]](#)
 - **Neural Fake News Detection**: Researched and documented ways of combating Fake News generated by neural models like **GPT-2** utilizing techniques like **GLTR** and **Grover**. [\[Link\]](#)
 - **Technical blogs**: Wrote technical tutorial blogs on concepts of machine learning, data science, NLP and tools like **CoreML**, **Julia**. Some of the blogs had over a **million unique views** and are now featured in prominent open source projects. [\[Link to Blog\]](#)
- **University of Southern California - Institute for Creative Technologies** Los Angeles, U.S.A
Research Assistant Jul. 2018 - Dec. 2018
 - **MentorPal**: MentorPal is a system for interactive virtual mentors based on real-life STEM professionals. Applied NLP techniques to improve Question-Answer dialogue model for virtual mentors using word embeddings like **word2vec**, classical NLP and built an ensemble of models in **TensorFlow**. [\[Link\]](#)
- **HackerRank** Bangalore, India
Software Engineering Intern Jan. 2018 - May. 2018
 - **Question Recommendation System**: Quantified internal metrics to measure efficacy of a hiring challenge and used the same to recommend questions. Used a data warehouse of **ElasticSearch** and **Kibana**.
 - **Google Apps Script App**: Built an internal software tool to automate commission calculation for sales optimizing the time for such calculation from **days to minutes**.

RESEARCH PUBLICATIONS

- **GCM: A Toolkit for Generating Synthetic Code-mixed Text**
Mohd Sanad Zaki Rizvi, Anirudh Srinivasan, Tanuja Ganu, Monojit Choudhury, Sunayana Sitaram
European Chapter of the Association for Computational Linguistics : System Demo [EACL 2021] [\[Link\]](#)
- **Feasibility and usability of MentorPal, a framework for rapid development of virtual mentors**
Benjamin D. Nye, Dan M. Davis, Sanad Z. Rizvi, Kayla Carr, William Swartout, Raj Thacker, Kenneth Shaw
Journal of Research on Technology in Education [JRTE 2020] [\[Link\]](#)
- **Quantum Computing: Evaluating Potential Quantification of Projective Psychological Test Scoring**
Dan M. Davis, Sanad Z. Rizvi, Kenneth Shaw, Mark C. Davis
MODSIM World 2019 [\[Link\]](#)

HACKATHONS / COMPETITIONS

- **ZS Young Data Scientist 2017** : Ranked in **top 0.002% (19 out of 9000)**, in ZS Young Data Scientist 2017 - a nationwide Machine Learning competition. [\[Link\]](#)
- **Siemens MakeITReal Technical Quiz 2017**: Won **first prize out of 300 teams** in the national level quiz that involved topics like Artificial Intelligence, Robotics and Computer Technology. [\[Link\]](#)

SELECTED OPEN SOURCE PROJECTS

- **Python Software Foundation**: Added bug fixes to prevent **IDLE** (python's default IDE) from crashing when a file name that has characters outside Basic Multilingual Plane (BMP) is opened. Got listed **among 1800** international contributors to Python programming language. [\[Issue Link\]](#) [\[List of Contributors to Python\]](#)
- **CoreML**: Built a sms spam classification app for the iPhone using **Swift** programming language and **Apple's AI toolkit - CoreML**. [\[Project Link\]](#)
- **Slack AI Chatbot**: Built an AI chatbot for **Slack** using Google's **DialogFlow** and Python. [\[Project Link\]](#)
- **Facebook Bot**: This project was to **automate the process of sending/receiving messages on facebook**, checking notifications and posting status updates using a program developed from scratch in python. [\[Project Link\]](#)
- **Html5Paint**: Created a simple online paint app using vanilla web technologies. [\[Live Demo\]](#)

SCHOLASTIC ACHIEVEMENTS

- **Best Paper Award - National Conference on Engineering Innovations and Solutions (NCEIS 2018)**: Received best paper award for publication on multi-disciplinary engineering capstone project.
- **IEEE Computer Society - Excellent Volunteer Student Award**: Honoured by IEEE Computer Society Director for excellent student volunteering and leadership in India. [\[Link\]](#)
- **Aakash National Talent Hunt Scholar**: Qualified for **90% scholarship** in a nationwide science & math competition. [\[Link\]](#)
- **International Competition for STEM - Quanta**: Organizing team for one of Asia's prominent High-School science competition. [\[Link\]](#)
- **Trinity College London Music Examinations**: Was among **Top-5** students in India for grade initial and grade 1 of **Guitar** Certification Examination by **Trinity College, London**.

TECHNICAL SKILLS

- **Prog. Lang.:** Python, JavaScript, C/C++, Java, *nix Shell Scripting.
- **ML Libraries:** NumPy, SciPy, Pandas, Scikit-Learn, TensorFlow, Keras, Matplotlib, Tensorflow.js, Spacy, NLTK, StanfordNLP, PyTorch, Transformers.
- **Tools:** JupyterLab, Elasticsearch, Kibana, LogStash, Django, Flask, RASA, DialogFlow, AWS, Docker.

TEACHING EXPERIENCE

- **Plaksha University, India**: TA for the course Natural Language Processing with Dr. Monojit Choudhury.
- **Ambedkar University, India**: Guest lecturer for Dr. Monojit Choudhury's class on utilizing Deep Learning for NLP.
- **Standard Bank, South Africa**: Corporate trainer of NLP for the bank's Advanced Data Sciences team.
- **Analytics Vidhya, India**: Designed, created and taught some of India's most prominent MOOCs on Deep Learning, Natural Language Processing, Data Science and Python.

ACADEMIC SERVICE

- **EMNLP '21**: Sub-Reviewer in Main track.
- **EMNLP '20**: Member of **Programme Committee** and **Reviewer** at Workshop for Natural Language Processing Open Source Software (NLP-OSS 2020). [\[Link\]](#)