

RISHABH JAIN

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DATA SCIENTIST | AI ENGINEER | ML ENGINEER

I am a proficient Data Scientist, AI Engineer and ML Engineer, who holds a PhD from the University of Galway, Ireland. I have expertise in working with AI technologies, particularly in the application of Speech-to-Text, Text-to-Speech and Large Language Models technologies. I am seeking a challenging position to leverage my skills and experience in a dynamic organisation. I am effective in dealing with problems and coming up with creative solutions. I also have experience in working towards development in Machine Learning, Deep Learning, Artificial Intelligence, and Natural Language Processing.

STRENGTHS AND TECHNICAL EXPERTISE

Soft skills:

Teamwork, Communication,
Leadership, Research work,
Problem Solving

Languages:

English, Hindi, and Spanish.

Languages and ML Libraries:

SQL, R, Python, C, C++, C#, Java, HTML,
CSS, Javascript, NodeJS, Pandas,
NumPy, SciPy, Librosa, Transformers,
Sklern, Seaborn, Tensorflow,
Tensorflow and PyTorch.

Softwares and Cloud Platforms:

Anaconda, Pycharm, Spyder,
Jupyter Notebook, Visual
Studio, Eclipse, AWS, GCP,
Docker, Git, Bitbucket

PROFESSIONAL EXPERIENCE

Oxford Wave Research, Oxford, UK **Research Scientist (Contract)**

February 2024 - May 2024

- Conduct research on training the models in the domain of Speech-To-Text (STT) and Large Language Models (LLMs) for low resource languages.
- Working with engineers to train and deploy such models for production, and optimizing models for real-world use cases such as improving ASR for low resource Albanian speech.
- Proficient in finetuning, and deploying cutting-edge LLMs including Saul, Mistral, LLama's, Gemma, Gemini, Zephyr Command-R and Psi-3, optimizing for performance and scalability.
- Creating a pipeline combining Whisper ASR, speaker diarization, speaker segmentation and LLM summarization, enhancing model capabilities for nuanced tasks in NLP and NLU for law and forensics use cases.
- Experienced in LLM Quantization methodologies, implementing efficient model compression techniques to optimize inference speed and resource utilization while maintaining model fidelity.
- Conducted evaluations of LLM performance across diverse linguistic domains, informing model refinement and optimization efforts.
- Proficient in leveraging a variety of LLM tools and frameworks such as Ollama, Langchain, LM Studio and llama.cpp.

University of Galway, Ireland **Research Assistant**

October 2020 - January 2024

- Project: DTIF-DAVID, Aim: Development of a multimodal (sound and vision) AI processing platform with low cost and low power consumption to be used for the creation of voice-enabled toys.
- Conduct a comprehensive review of existing research and literature related to child speech understanding, ASR and TTS.
- Collaborate with the research team to share insights, progress, and findings.
- Design and conduct experiments to evaluate the performance of the ASR and TTS system on child speech.
- Developing applications for speech data collection, creating methodologies for data annotations and cleaning.
- Attending conferences, workshops, and seminars. Participate in knowledge-sharing activities within the organisation and the research community.
- Documentations of research, preparing reports/presentations and contributing towards novel publications.
- Setting up and managing distributed training pipelines, coordinating data preprocessing and augmentation, monitoring training progress, and evaluating model performance using appropriate metrics.
- Managing and leveraging multiple GPUs efficiently for distributing and parallelising computation to accelerate training and inference processes.

Xperi Galway

October 2020 - January 2024

Researcher (Consultant)

- Conduct research on state-of-the-art methods in STT and TTS.
- Collaborate with cross-functional teams, including engineers, linguists, and product managers from Xperi Ireland and Xperi USA.
- Design and develop algorithms for STT and TTS for edge devices.
- Collaborating with engineers for optimising AI models for deployment in production environment.

IEEE Student Branch, University of Galway

January 2021 - September 2023

IEEE Student Branch Chair

- Provide strong leadership and representation for the IEEE-SB.
- Planning and organising events, meetings, and activities.
- Organise technical talks, workshops, and conferences.
- Foster collaboration with other branches and industry partners.
- Represent the Student Branch at IEEE meetings and events.

EDUCATION

PhD in Artificial Intelligence for Speech

September 2021 - May 2024

University of Galway, Ireland

Research Area: Child speech understanding and generation via neural ASR and TTS models

MSc in Data Analytics

September 2019 - August 2020

University of Galway, Ireland

Grade: 1.1 Honours

Thesis: Semi automatic toolkit for analysis of video, audio and text data based on face recognition in videos.

B.Tech in Computer Science and Engineering with specialization in Bioinformatics

July 2015 - May 2019

VIT University, Tamil Nadu, India

CGPA: 8.73 (equivalent to 1.1 Honours)

PUBLICATION AND CONFERENCES

Publications:

- R. Jain, M. Y. Yiwere, D. Bigioi, P. Corcoran and H. Cucu, "A Text-to-Speech Pipeline, Evaluation Methodology, and Initial Fine-Tuning Results for Child Speech Synthesis," in IEEE Access, vol. 10, pp. 47628-47642, 2022, doi: 10.1109/ACCESS.2022.3170836.
- R. Jain, A. Barcovschi, M. Y. Yiwere, D. Bigioi, P. Corcoran and H. Cucu, "A WAV2VEC2-Based Experimental Study on Self-Supervised Learning Methods to Improve Child Speech Recognition," in IEEE Access, vol. 11, pp. 46938-46948, 2023, doi: 10.1109/ACCESS.2023.3275106.
- Jain, R., Barcovschi, A., Yiwere, M., Corcoran, P., Cucu, H. (2023) Adaptation of Whisper models to child speech recognition. Proc. INTERSPEECH 2023, 5242-5246, doi: 10.21437/Interspeech.2023-935

Conferences:

- Attended IEEE Region 8 SYP congress held in Tunis, Tunisia to represent the University of Galway Student Branch as Chair.
- Worked as a Reviewer for the IEEE Access Journal, IMVIP 23 conference and Sped 23 Conference.
- Organised a special session at the SpeD 23 conference on Child Speech Technologies held in Bucharest, Romania.
- Attended and presented at the Interspeech 2023 in Dublin, Ireland.

CERTIFICATIONS

- AI for Medical Diagnosis by Deeplearning.ai, May 2020
- Introduction to Cyber Security Specialization by NYU, May 2019
- Machine Learning with TensorFlow on GCP Specialization | June 2018
- Deep Learning Specialization by Deeplearning.ai, April 2018
- TechnologyTraining with projects TCS: Core JAVA, June 2017

REFERENCES

- Dr. Anil Alexander, CEO, Oxford Wave Research, Oxford, UK, anil@oxfordwaveresearch.com
- Dr. Peter Corcoran, IEEE fellow, Professor at the University of Galway, Lead PI in DAVID, HELIUS and d-real projects, peter.corcoran@universityofgalway.ie
- Dr. Gabriel Costache, Senior Director of Engineering at Tobii (previously part of Xperi Galway), gabriel.costache@tobii.com