Rishabh Jain, PhD

DATA SCIENTIST | AI ENGINEER | ML ENGINEER

Contact Details:

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Hugging face:
https://huggingface.co/rishabhjain16

Work Status: Ireland Stamp 4

Fields of Interest

- Computer Vision and Deep Learning
- Python Development and Machine Learning
- Artificial Intelligence in Speech

Technical Skills:

- Languages: SQL, R, Python, C, C++, C#, Java, HTML, CSS, Javascript, NodeJS
- Analytical techniques: Regression, Classification, Clustering, Forecasting, Neural Networks, PCA, SVM, CNN.
- ML Libraries: Pandas, NumPy, SciPy, Sklearn, Seaborn, Tensorflow, Keras, Tensorflow and PyTorch.
- Cloud and related platforms:
  - AWS
  - GCP
  - Docker
- Version Control: Git, Bitbucket
- Software: Anaconda, Pycharm, Spyder, Jupyter Notebook, Visual Studio, Eclipse.

Hobbies

- Football
- Reading
- Travelling
- Volunteering - Macnas Halloween Parade, Galway 2020, Rotaract, AIESEC, IEEE Student Branch chair

Profile

Holds a PhD from the University of Galway, Ireland. Data scientist with expertise in AI, particularly in the application of Speech-to-Text, Text-to-Speech and Large Language Models technologies. Seeking a challenging position to leverage my skills and experience in a dynamic organisation. Effective in dealing with problems and coming up with creative solutions. Experience in working towards development in Machine Learning, Deep Learning, Artificial Intelligence, and Natural Language Processing,

Work Background

Research Scientist (Contract)
Oxford Wave Research, Oxford, UK
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 optimising models for real-world use cases.
- Proficient in fine-tuning, and deploying cutting-edge LLMs including Saul, Mistral, LLama's, Gemma, Gemini, Zephyr Command-R and Psi-3, optimizing for performance and scalability.
- Specialized in LLM summarization techniques and Speaker Diarization following Whisper ASR, enhancing model capabilities for nuanced tasks in NLP and NLU for law and forensics usecases.
- 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

Research Assistant
University of Galway, Ireland
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.

Soft Skills

- **Teamwork:** Gained teamwork experience by working in teams for various master's and bachelor's projects and also by working in a team as a software development intern.
- **Communication:** Developed excellent communication skills through teaching, mentoring, and volunteering. And by giving presentations during PhD, masters and bachelor's education.
- **Leadership:** Working at NGOs, teaching, and volunteering through Rotaract and AIESEC led me to achieve excellent leadership qualities.
- **Research:** Completing numerous projects in PhD and Master's degree. Also worked on different online courses has led me to have enhanced critical, computer and research skills.
- **Problem Solving:** Built ability to solve problems by taking an analytical and systematic approach, demonstrated through various technical projects, hackathons, Kaggle competitions, and online courses.
- **Languages:** Full professional proficiency in English, native/bilingual proficiency in Hindi, and conversational proficiency in Spanish.

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

Referees

- Dr. Michael Schukat, Programme Director - M.Sc. in Artificial Intelligence, School of Computer Science, University of Galway, michael.schukat@universityofgalway.ie
- 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 Xperi Ireland, gabriel.costache@xperi.com

Researcher (Consultant)
Xperi Galway
October 2020 - January 2024

- 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 Chair
University of Galway
January 2021 - September 2023

- 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
University of Galway, Ireland
September 2021 - May 2024

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

MSc Data Analytics
University of Galway, Ireland
September 2019 - August 2020 | (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
Vellore Institute of Technology, Tamil Nadu, India
July 2015 - May 2019 | (CGPA: 8.73 equivalent to 1.1 Honours)

Publications 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

Journal and 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.