Hemantha Krishna Bharadwaj

✉ hemanthkrishna1298@gmail.com / 🔗 LinkedIn / 📞 +1 470 838 8094 / Website: hemanthkrishna1298.github.io

Education

Georgia Institute of Technology — Atlanta, GA
MS Electrical and Computer Engineering, DSP-Machine Learning Specialization — *Aug 2022 – May 2024*
Teaching Assistant, OMSCS Machine Learning, GPA: 3.83/4.0

Birla Institute of Technology and Science [BITS] Pilani — India
B. Eng. Electrical and Electronics, GPA: 9.3/10.0 — *Aug 2018 – May 2022*

Relevant Coursework: Statistical ML, Data Structures, Algorithms, Advanced Programming, Digital Signal Processing
Programming Languages: C, C++, Python / **Relevant Software**: Langchain, OpenAI, Claude, Azure AI, Pytorch, Git

Experience

Machine Learning Data Scientist — *Jun 2024 – Present*
RippleWorx
- Developed and deployed large language model (LLM) systems for diverse applications, incorporating plug-and-play LLM subsystems for output generation, evaluation, and iterative prompt optimization
- Programmatically deployed LLM applications to the cloud, leveraging Azure AI Studio for deployment
- Engineered hybrid search engines (combining semantic and keyword search) to enhance functionalities throughout company software

Generative AI Technical Lead — *Jul 2023 – Jan 2024*
Airlinq
- Led a cross-functional team of 15 and oversaw the end-to-end process, from concept to deployment, of an AI system that allows vehicle owners to engage in personalized conversations with their cars
- Leveraged LLMs in conjunction with retrieval augmented generation and autonomous task generation for creating tailored experiences for car owners, vehicle manufacturers, and service engineers
- Designed and implemented a system comprising vector databases, LLM chains, autonomous agents, and memory
- Demonstrated proficiency in a diverse range of tools and frameworks: Langchain, LLMs (OpenAI, Llama2, Falcon), speech transcription (Whisper AI), HuggingFace integration, embedding models

Machine Learning for Speech — *Aug 2022 - Dec 2022*
Georgia Tech
Project: Analysis of SSL Models for Speaker Identification
- Improved on self-supervised speaker-ID models (Hubert & Wav2Vec2) by using an embedding ensemble approach
- Explored the necessity of attention masks and zero-padding and studied changes in performance in their absence
- Optimized input audio length and achieved 97.31% accuracy, outperforming Hubert on the VoxCeleb dataset

Machine Learning Intern — *Feb 2022 - April 2022*
Digital Audio Processing Lab, IIT Bombay
Project: Multi-modal audio-visual Raga and Singer Classification using CNNs
- Developed 3 2D convolutional network architectures for Raga (melodic mode) identification
- Experimented with 6 spectrogram inputs with 2D CNN for the classification task for multimodal classification

Machine Learning Thesis under Bill and Melinda Gates Foundation — *Aug 2021 – Feb 2022*
SPIRE Lab, Indian Institute of Science
Project: Speech Recognition in Agriculture, Finance for the Indian Poor
- Developed a domain-specific web scraping pipeline in Python to create NLP training text corpora in 9 local Indian languages that increased scraping efficiency by 40%
- Analyzed collected text corpora to design and train domain-specific NLP language models for use in speech recognition and speech-to-text systems
- Developed speech recognition models in local Indian languages for use in educationally backward rural areas

Machine Learning Intern — *May 2021 – Aug 2021*
University of Calgary
Project: Identification and Cancellation of Fauna Noise using AI
- Developed an audio processing model using deep neural networks for identification and cancellation of environmental fauna noise from professional audio recordings
- Preprocessed audio recordings into mel spectrograms for a 4-layer neural network identifying possible noise frequencies for subsequent removal from the original audio signals

Publications and Conferences

1. H. K. Bharadwaj et al.," A Review on the Role of Machine Learning in Enabling IoT Based Healthcare Applications," in IEEE Access, vol. 9 [Link] [150+ citations]
2. Volunteer - International Society for Music Information Retrieval (ISMIR) Conference 2021

Academic Achievements

Mitacs Globalink Research Scholarship — *2021*
- Awarded a full scholarship to pursue a summer internship at the University of Calgary, Canada

O.P. Jindal Engineering and Management Scholarship — *2019*
- 1 of 80 engineering students from among the best academic performers in the top 23 Engg institutes in India

BITS Merit Scholarship — *2018-19*
- Awarded the BITS Merit Scholarship for being in the top 3% academic performers in the batch