# RAJARAM SIVARAMAKRISHNAN

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A data-driven Machine Learning Engineer, proficient in Python with a problem-solving mindset, an analytical approach to tasks and strong knowledge of Computer Vision and Natural Language Processing. Interested in creating End to End ML solutions that solve problems and create impactful end-user experiences.

## EXPERIENCE

### RTI INTERNATIONAL | DURHAM, NC
**Innovation Technology Developer 2**                                        *APRIL 2022 - PRESENT*
- Developed a multimodal sentiment analysis platform that collects and recognizes emotions using custom-built AI models for Facial, Natural Language Processing, and Human Vocal Sentiment Analysis to help with interview assessments and create metrics for each unique user.
- Built a platform that records and analyzes users cognitive and emotional states in a non-invasive manner by utilizing Face identification on raw thermal camera photos to measure cognitive load.
- Developed an automated end-to-end platform for recognizing the count and dwell time of individuals visiting public spaces using customized computer vision models on camera sources, as well as a web-based UI for displaying outputs and generating reports.
- Improved responsiveness and overall performance of the code development in a resource constrained environment by leveraging parallel processing and multithreading on Edge devices.

### RTI INTERNATIONAL | DURHAM, NC
**Innovation Technology Developer 1**                                        *JULY 2020 – MARCH 2022*
- Created a prototype for predicting a visitor's journey and mapping it from camera angle into 2D space.
- Developed a Jupyter notebook with interactive elements based on object tracking data to comprehend visitor involvement for the North Carolina Museum of Natural Sciences.
- Incorporated a performance upgrade to a CV-based technique for subsampling video data, boosting graphics processing unit (GPU) inference speed by up to 25%.
- Implemented a data pipeline that would clean captured videos and deliver them to the Azure Blob Storage algorithm.

## TECHNICAL PROJECTS

### Facial Emotion Recognition [ViT]                                        *NOV 2021*
- Finetuned Vision Transformer model to perform Facial Emotion recognition on images and videos using the pre-trained model provided by Google AI.
- Model can be found at (https://huggingface.co/Rajaram1996/FacialEmoRecog)

### Audio Emotion Classification [HuBert]                                        *NOV 2021*
- Finetuned HuBert model from Facebook AI Research to analyze Human Vocal Sentiment in audio clips extracted from videos.
- Model can be found at (https://huggingface.co/Rajaram1996/Hubert_emotion).

## EDUCATION

### North Carolina State University, Raleigh, NC                                        *AUG 2018 – MAY 2020*
- Master of Science in Electrical Engineering; GPA: 3.59/4.0
- Coursework: Signal Processing, Digital Imaging Systems, Probability and Random Process, Computer Vision, Neural Networks, IOT Analytics.

## ADDITIONAL

- **Certifications & Training:** Google Cloud Platform Machine Learning Fundamentals, Data Science Math Skills from Coursera.
- **Hackathon:** Awarded the third best solution of the Cohere AI Hackathon that took place on August 19-21, 2022.
- **Community Challenge:** Built second best model for Low resource Language ASR for Hugging Face using Wav2vec2 XLSR model.

## TECHNICAL SKILLS

Programming languages: Python, SQL
Software frameworks/tools: Linux, Docker, Transformers, Git, GitHub, GitLab, CircleCI