Tanul Krishnansh Singh

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EXPERIENCE

Lead Machine Learning Engineer   Aug 2021 – Present
LevelAI   *Remote*

- **LLM Based Autoscoring of Contact Center Agents (On-Going)** : Developed an informative system to Autoscore contact center agents by answering a diverse set of rubrics(Questions). Fine Tuned a Mixtral-7B model which is capable of answering diverse set of rubric questions out of the box in a zero shot manner , enabling us to scale this service to all clients
- **Contextual Emotion Detection in Dialogue Systems** : Instruction Fine Tuned Deberta-v3 model with cloze-style prompts for dynamic emotion detection from customer utterances from Contact Center Conversations, achieving the capability to categorize utterances into seven distinct emotion classes (Angry, Disappointed,Annoyed, Disapproval,Happy , Gratitude, Admire).
- **AI Based Customer Satisfaction Score and Customer Effort Score Detection** : Employed a sophisticated regression neural network that uses various hand crafted diverse features like sentiment score , emotion variations vector ,resolution , User vector, answer to various questions like "Did the customer end on a gratitude?" , etc to produce Customer Satisfaction Scores (CSAT) and Customer Effort Scores (CES), enabling nuanced insights into service quality and customer engagement.
- **Detecting Customer's Concern and Resolution in Customer-Agent Interactions** : Spearheaded the development of a system designed to analyze and understand the core issues and resolutions within customer-agent interactions. This project enhanced the company's capability to provide superior service by accurately identifying and addressing customer needs.The back bone is a instruction Fine tuned a Flan-T5 base model which given a conversation generates the answer to the questions : "What was the primary concern of the customer?", "Did the agent resolve the customer Query?"

NLP Engineer   Aug. 2020 – Aug. 2021
Javis   *Mumbai,India*

- Maintaining , Improving and expanding capabilities of Javis OMS(Order Management Stack) stack which is a language based smart ordering system based on contextual query-key matching.
- Helped in developing an algorithm which gives a fxed output (both on word and bouding box level) irrespective of the ocr system used(eg : AWS OCR, Azure OCR ,etc) which led to a saving of good scale

PATENTS AND INNOVATIONS

Dynamic Intent Detection in a Low Resource Setting | *Pytorch,Transformers,LLMs*   June 2020 – Present

- Innovated a dynamic intent detection system that can detect intents from customer utterances where the intents can be defned by giving 5-7 sample phrases .
- This system adapts to real-time client modifcations in the intent defnition (removal/addition of example phrases , removal of intent as a whole ,etc) ,surpassing traditional static models. This system, built on lightweight models,allows for rapid reconfguration based on client inputs, enhancing fexibility and responsiveness in customer interactions.
- The backbone is a Retrieve-Rerank Based solution using lightweight models (one fine tuned bi-encoder and one fine tuned cross encoder model) as a pseudo task to detect intents from customer utterances , this algorithm even beats GPT3.5 in best settings

PUBLICATIONS

GWNET: Detecting Gravitational Waves | *Pytorch,ConvNets*

- This was part of our gold Winning solution for Kaggle Comeptition on Detection of Gravitational Waves
- We built an end-to-end 1D Convolutional Neural Network architecture that can be applied directly on raw time-series data collected by these interferometers to detect gravitational waves. The key model aspects are ability to capture hierarchical features using parallel Convolutional blocks and residual learning via custom Residual layers.

Achievements

Kaggle Days Championship Regionals - Winner
- My Team won the Kaggle Days Championship Regionals to get a ticket to Barcelona,Spain for the fnals of Kaggle days Championship where we will represent India .In the fnals 36 teams from all over the world will fght for the World Champion Title

Kaggle Competition Master
- Kaggle Competitions Master (Ranked 250 among 160,272 Kagglers in the world ,top 1 percent in Kaggle Competitions) with 3 gold , 10 silver medals . All in all I have participated in more than 30 competitions and have medals in 24 of them

Kaggle Notebooks Grandmaster
- Kaggle Notebooks Master (Ranked 9 among 175,272 Kagglers in the world) with 16 gold medals . Every Notebook explores solutions to different problems of different verticals

Education

Harcourt Butler Technical University   Kanpur,India
Bachelor of Technology, Mechanical Engineering   *Aug. 2016 – July 2020*
- Graduated with Honours Degree
- Student Secretary, Cultural Sub-Council
- Events Head and Founder of Entrepreneurship Cell

Technical Skills

Languages: Python, SQL (Postgres), HTML/CSS, CUDA, Triton
Frameworks: vLLM, HuggingFace, Qdrant, LlamaIndex, LangChain, TensorFlow, PyTorch, Django, Flask, FastAPI
Developer Tools: Git, Docker, Google Cloud Platform, VS Code, Kubernetes