Santhosh Kolloju

AI ENGINEER

Details

9916652065
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Links

LinkedIn

Github

Medium

Skills

Python

PyTorch

TensorFlow

SQL

JavaScript

HTML/CSS

Django

Flask

NLP

Deep Learning

Machine Learning

Profile

I have completed My Bachelor's degree in computer science from MVSR Engineering college (Osmania University) and a Masters in Data Science from VIT University. Currently Working in GAA Vitality team an applied research group in fidelity investments. My work is focused on **Natural language processing** using various machine learning and **deep learning** techniques, Prior to this, I was working in the Manufacturing Analytic's team in **WIPRO** Technologies where my focus area was on analyzing and creating machine learning and statistical-based models for the semiconductor manufacturing industry.

Employment History

Associate Data Scientist, Wipro Technologies, Benguluru

JULY 2014 — SEPTEMBER 2017

Lead - AI Applied Research, Fidelity Investments, Benguluru

OCTOBER 2017 — PRESENT

Education

Masters In Data Science, VIT University, Chennai

MAY 2015 — MARCH 2017

Upscale programme by WIPRO. Gradauated with 8.4 GPA

BE In Computer Science, Osmania University, Hyderabad

MARCH 2010 — MARCH 2014

Graduated with 84%

Projects

Language Modelling On Domain Specific Data

Scraped the data from the Personal investing section of the internal website and have trained a GPT2-Medium based language model for information retrieval. Have tested the model for the zero-shot and few-shot setting. The results of this closed domain were very promising. Deployed the model as a Virtual assistant to the associates.

Uncertainity Modelling/Risk Modelling Using Proabilistic Deep Learning

This project is to find the erroneous calculations in the Defined Benefits Retirement space. When an employee retires from an organization, based on his service history he will be paid some amount. The calculations are manual in nature and there could be two kinds of errors here 1)Over Payment 2)Under Payment. This could be because of wrong data or interpretation issues. The idea is to find and alert the associate about erroneous calculation & Replace the random QC with targeted QC with outliers flagged by the model.

Methods Implemented :

- Random Forest Regression & GBM (Baseline)
- Quantile Regression
- Neural Structured Learning
- Bayesian Deep Learning Using TensorFlow Probability(Single Head & Dual Head Model)
- NSL + Bayesian Deep Learning

Defined Benefits Letter Generation

Fidelity manages Defined Benefits (DB) account for its customers, who call the reps to answer queries related to their Benefits plans. These calls may be pushed as

tickets. the tickets once resolved, may result in handwritten letters which are sent to the respective customers. I worked on creating a deep learning model that can automatically write letters from the research notes. This comes under the Natural language generation problem (NLG).

Methods Implemented :

- Pointer Generation Network(Research Work by Abigail See)
- BERT as Encoder & Decoder Trained from scratch.(Custom network created by me)
- GPT-2 Based Generation (Research work by Open AI)
- BART Based Generation (Research work by Facebook)

The model is deployed in production with very good accuracy.

Health & Welfare Smart Compose

A Smart compose is an assistant that helps the associates to write the letters to the clients or participants much faster. this is similar to the smart compose option implemented in GMAIL.

Methods Implemented :

- LSTM Based Encoder-Decoder model
- Transformer Based Approaches

This model has been modified to fill the missing /unknown words predicted by the pointer generator model.

I-Knowledge(Smart Information Extraction Tool)

Fidelity operations floor deals with a lot of queries from customers and answering to them requires access to a lot of information. This information is contained in thousands of documents, presently the queries are resolved by going through the documents manually, We have developed an Information Extraction tool to solve this problem.

Methods Implemented:

- Started with BIDAF(Bi-directional Attention Flow) and then BERT and ALBERT Based models were used for machine comprehension.
- T5 Based Re-ranking Model
- Learning-Based Information retrieval using USE-QA & DPR.
- GPT-2 & T5 For Automatic Question Generation

Trending As A service

Business units receive tickets to solve from either participants or clients. Most of the time higher management is not aware of the major volume drivers of the problems. Manually coming up with different trends in the data is a huge effort and not always the correct way as there can be a human bias. we have built a tool, an unsupervised way of coming up with trends in the data. The solution was built in a very efficient and scalable manner so that it can be readily deployed to different business units with minimal effort.

Methods Implemented:

- tf-idf weighted Word2vec and fast text algorithms for getting the word embeddings
- Connected components & Hierarchical clustering algorithms for coming up with trends
- Allen NLP Architecture concepts for scalability.

Recommendation Engine

IT & infrastructure management team which works on support receives the problems which are mostly repetitive in nature (like disk failure on a server), Analysts who are solving this spends 80% of their time analyzing the problem and remaining solving the actual problem. To increase efficiency, we have built a recommendation engine which given a new problem recommends the most probable solutions which have worked in the past

Other Projects

Root Cause Analysis (Genealogy Data), Yield Prediction, Data Mining Automation Tool, ETL Automation tool, Reporting Dashboard for Alcatel Lu-cent (Jasper Soft & Tableau)

Self Learning & Open Source

JANUARY 2018 — AUGUST 2020

Hello Doc: I have built a Semantic search engine end to end (UI + Back-end)

https://github.com/santhoshkolloju/hellodoc
https://www.youtube.com/watch?v=n36bdyEICMc

Abstractive Summarization:
https://github.com/santhoshkolloju/Abstractive-Summarization-With-Transfer-Learning

Intelligent cropping of images:

https://github.com/santhoshkolloju/Intelligent-Cropping-of-Images

Articles :

https://medium.com/swlh/modelling-aleotoric-epistemic-uncertainty-in-tensorflow-6a15ef49fb4

https://medium.com/@santhoshkolloju/attention-mechanisms-2fe6f5ff7c72

https://medium.com/@santhoshkolloju/convert-your-pytorch-models-to-tensorflow-with-onnx-8