TANIYA SAINI

MACHINE LEARNING ENGINEER

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PROFESSIONAL PROFILE

Machine Learning Engineer professional with strong expertise in building variety of Deep Learning as well as traditional Machine Learning solutions, thereby helping Fortune 500 clients scale data driven decision making in various business functions. Love working with state-of-the-art tools and technologies. Have a knack of solving problems that haven't been solved yet.

EDUCATION

Indian Institute of Technology, Dhanbad
M.Tech - Computer Science and Engineering
[2016 – 2018]
PCCS - Noida
B.Tech - Computer Science and Engineering
[2010 – 2014]

- **Research Publication | Link |**

- **Role and Responsibilities:**
  - Designing and building impactful Deep-Learning solutions for business use-cases.
  - Actively researching about the latest AI and DL techniques
  - Training the freshers for smooth processing into the ML projects.

- **Cloud Vendors** GCP (Google), AWS
- **Programming** C, C++, Python
- **ML Frameworks** Tensorflow, Keras
- **Machine Learning**
  - Traditional Machine Learning
  - Convolutional Neural Network
  - RNN (LSTMs and GRUs)
  - Recommender System
  - Generative Adversarial Network (GAN)
- **Data Structure and Algorithm**

WORK HISTORY

Feb-2018 – Present
Machine Learning Engineer **Quantiphi Inc.**
Designing and building impactful Deep-Learning (DL) solutions for business use-cases. [e.g. Image, Text, Video and Speech] Actively researching about the latest AI and DL techniques.

Jul-2016 – May-2018
GTA - Graduate Teaching Assistant **IIT Dhanbad**
Worked as a Subject Instructor in Computer science Subjects like Advance Algorithm and Data Structure, and Machine Learning. Assist more than 50 students in lab work and designed module for their lab work and evaluated their assignment

RESEARCH AND PUBLICATION

March 2018
IEEE Conference on Natural Language Processing **Links**
•International Conference on Recent Advances In Information Technology - (IEEE)
Predicting Tags for Stack Overflow Questions Using Different Classifiers.
Worked with • **Associate Prof. Sachin Tripathi** to identify the performance bottleneck affecting throughput used in NLP and studied approaches used in Natural Language Processing. Surveyed pros and cons of various Machine Learning Algorithm and different approach used in Natural Language Processing - NLP. The fundamental of Master Thesis Project is following:
•The adequacy of any online education forum depends on the user's experience based on users interests and demands. Large-Scale datasets are available on these websites that can be mined and pre-processed using text classification and can be used to know users query regarding a particular topic. Information that is provided should be relevant to users interest. We propose a system that will take significant amount of data from a website and use that data for different approaches to predict the tag for the website Stack overflow posts and achieve a better accuracy for 1000 most frequent tags. Build a novel system that will take significant amount of data from a website and use that data for different approaches to predict the tag for the website Stack overflow posts and achieve a better accuracy for 1000 most frequent tags.

KEY PROJECTS

Convolutional Neural Network, & Recurrent Neural Network

Automobiles

Audio classification based on Connector clicks

More

• **Problem Statement:** Develop machine learning solution for detecting the clicks helping engineers to ensure that connections in the vehicles have been made properly in the plants. The end solution will be a user interface that needs to be integrated with the hardware to take real-time decisions.
• **Solution Implementation:** Tag and label the audio data. Preprocess and clean the data for modeling. Train a classification model using CNN and RNN. Integrate the model with a user interface. Deploy and host the solution on Google cloud platform and develop the CD pipeline for deployment.
• **Impact:** In pipeline.

Face-net, SSD Object tracking

Media & Entertainment

Supervising Appearance and Anomaly Detection

More

• **Problem Statement:** To automate the monitoring of person appearance and detect the activity of person (anomaly detection). Various quality-inspections, currently being performed manually. Challenges involve to handle the large amount of data approx 200 hrs of videos feed.
• **Solution Implementation:** Developed a CNN based computer-vision model, that would perform localization and recognition of persons passing on a gate in real-time. Model also performs recognition of person and tracking of person activity.
• **Impact:** Developed a highly accurate and a small-size model that can easily be deployed on a static camera installed on the side of gate.

Recommend-er System

Retail Industry

AI based Fashion Recommendation System

More

• **Problem Statement:** To build a recommend-er system for one of leading retail industry. This system will recommend the items for user's current dressing style and face shapes. Challenges involve handle the large data to trained the computer vision model. Recommending the item to user in real time based on availability of item in stores.
• **Solution Implementation:** Developed a combination of different computer vision models that would perform highly accurate recommendation for the user. Different computer vision models are trained and build in a pipeline together for recommending items.
• **Impact:** Developed a highly accurate that can easily be deployed on a static camera installed on the side of a store.

Convolutional Neural Network

Real Estate

Data Warehouse System

More

• **Problem Statement:** To build a custom data warehouse system for one of the leading real estate industry in the world. The custom model include the multiple classes to be classified with different condition. Challenges involve to handle the large data approx 200k images with multiple classes approx 100 with minor different in classes, and simultaneously perform multiple requests to system with minimal inference time.
• **Solution Implementation:** Developed a CNN based computer vision model classification model that would perform highly accurate classification. Perform different mathematical and different hashing techniques to solve the problem. Create a pipeline for end to end user interface.
• **Impact:** Developed a highly accurate model and deployed on cloud machine learning engine (CMLE).

Pointer Generator Network

Media & News

Summarization of News and Documents

More

• **Problem Statement:** To build a custom model of a text summarisation, that would take a passage and come up with the best possible summary, title and most popular word associated to the passage.
• **Solution Implementation:** Tried out various traditional machine learning as well as deep learning model. Finally implemented an architecture inspired from state-of-the-art research - - Get-pointer generator network, trained on CNN, Daily news dataset.
• **Impact:** Above model was used to get the text summary with title and most popular word from various passage related to official SOP manuals and reports followed in a production plant, provided by the client.

Recurrent Neural Network LSTM

Health-care

DNA-Splice Gene Junction

More

• **Problem Statement:** Required to accurately splice protein encoding part of the gene for DNA-level gene, that would take any length of gene-sequences and perform the protein encoding level of gene. Challenges involve the availability of tag data of gene sequences.
• **Solution Implementation:** Developed a deep learning model for gene splicing. The data set is split into 5 folds. Selected model employs RNN based word embedding fused and passed into Highway Network layer, followed by dual attention.This is then passed through a bi-directional LSTM modelling layer to predict span of relevant level to the given gene-sequences.
• **Impact:** Above model was used to get level from various gene sequences of protein encoding, reports followed in a production plant, provided by the client.