



VIVEK SURESH RAJ

RECENT UNIVERSITY
GRADUATE – JAN, 2021

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SKILLS

Languages:

Python, C, C++, HTML/CSS, XML.

ML-Libraries:

Tensorflow/Keras, Scikit-learn,
Xgboost, nltk, SpaCy, Transformers,
HuggingFace, OpenAI

Databases:

SQL, PostgreSQL, MongoDB and
Neo4j.

Tools:

Streamlit, Android Studio, VMWare

Linux:

Kali-Linux for ethical hacking.

EDUCATION

Master of Engineering / Geomatics Data Science specialization

University of Calgary, Calgary, AB
Sep 2019 - Jan 2021

Bachelor of Engineering / Electrical and Electronics Engineering

Kumaraguru College of Technology,
India.
Aug 2013 – Apr 2017

SUMMARY

Recent graduate with 2 year of academic machine learning experience with university projects, course works and research works. An aspiring machine learning scientist with focus on NLP. [**GitHub:** [vivii9630](#)]

- Professional experience in Python.
- Hands-On experience with Machine learning frameworks.
- End-to-end [ML-Pipeline] implementation of machine learning projects.
- Team player with excellent communication and inter-personal skills.

PROFESSIONAL EXPERIENCE – Graduate researcher

CONTROLLED TEXT GENERATION ON DECODER – Beam search, greedy search & k-sampling.

University of Calgary, Calgary, AB / January 2021 – April 2021

- Implemented seq2seq learning architecture with homologous encoder and decoder architecture for contextual text generation.
- Evaluated the generated texts with certain metrics and proposed suitable control methods to improve the text generation system.
- Worked on effective methods to contain latent semantic meaning of source sequence and to overcome long term dependency parsing.
- Reported the findings, solutions/strategies to control texts for human-like text generation, eliminate duplicates and engagingness of generated texts.

[[Click here](#) for accessing the project. Completed on: 25 – MARCH- 2021]

TIME-SERIES PREDICTION AND GENERATION OF SINUSOIDAL FUNCTION – RNN Modelling

University of Calgary, Calgary, AB / May 2020 – July 2020

- Demonstrated idea of the paper ‘Time-series modelling’ framework using SimpleRNNCell with TensorFlow.
- Presented results on jupyter notebook containing framework design and development of Sinewave with a set of training recipes.
- Reported the results and discussed on effects of LSTMCell for SimpleRNNCell.

[[Click here](#) for accessing the project. Deep learning frameworks: TensorFlow, Keras,]

SKILLS AND EXPERIENCES

University of Calgary, Calgary, AB

- Dimensionality reduction to identify principal components with high variances. Projection of dominant eigen values to interpret linear transformation of eigen vectors in vector spaces corresponding to the labels.
- Achieved SOTA results in machine learning in solving real-world problems using simplified neural networks by KNOWLEDGE DISTILLATION of neural network.

Projects & it's use case worked on:

TEXT CLASSIFICATION:

- Implemented text classification on Twitter dataset – comparison of models LSTM & BiLSTM over the dataset [[click here](#)]

TEXT SUMMMARIZATION:

- Built, developed and deployed a text summarization web-app using SpaCy, nltk and streamlit – [click here](#) to access the web-app.

NAMED ENTITY RECOGNITION:

- SpaCy medium language model for POS tagging and NER extraction within web-scraped content was performed – [[click here](#)]
- Developed a novel method of conversational AI to tag relevant entities within the user-entered tokens.

QUESTION ANSWERING:

- Built a simple deep neural architecture based chatbot built using small intent file with Bag-Of-Words vector space representation.
- Trained seq2seq model based Chatbot built with encoder-decoder architecture using CORNELL dataset.
- Developed cosine similarity scores and tf-idf based relevant information extraction and question answering system.

PREDICTIVE TEXT GENERATION:

- Achieved contextual text generation using multi-attention layer-based encoder decoder model to avoid long term dependency issue.
- Homologous GRU based time-discrete layers were employed within the encoding and decoding blocks. – [[click here](#)]

WORK EXPERIENCE – APPLICATION BASED PROJECTS

Calgary, AB / September 2019 – Present

AI CHATBOT

- Implemented a chatbot with one-hot vector representation of multi-response corpora under tag/labels using BOW method and built a dense neural network for training the model over the one-hot embeddings.

(Tools used: *nltk, tensorflow/keras, pickle, pytsx3*)(Completed: 16-03-2021)

DINO – personal voice assistant for University of Calgary.

- Performed count-vectorization with TF-IDF on web-scraped corpus for relevant feature extraction.
- Implemented cosine-similarity b/w vectors to build Rule-based voice assistant. (Tools & packages used: *pytsx3 – pyaudio driver installed, speech recognition, weather, newspaper, datetime, webbrowser, wikipedia*)

GENERATIVE AI CHATBOT WITH GPT2 MODEL – OpenAI

- Implemented pre-trained GPT2 model to generate coherent texts for question answering application. (Submitted: 12 MAY 2021)

HONORS & PUBLICATIONS

- PyPi** – Python library file to compute & analyze structured DataFrame for NaN values in the dataframe. [Licensed and Publied: *PyPi-vivek2dropoffnan v0.0.1*]
- Represented ESRI event – Developed on User Interface part of webapp for developed for health industry from University of Calgary. [Team – “*You know who*”, February 2020]
- Vector similarity score-based voice assistant for querying on the University of Calgary – [click here](#) for accessing paper
- Seq2seq learning based chatbot with CORNELL dataset using Encoder decoder architecture with attention layer – [click here](#) for accessing the paper
- Participated in Hackathon on “Hypothesis testing using z-score and T-test” by *MachineHack* – May, 2020.

REWARDS

DRISYAAN – VEHICLE PROTOTYPE FOR PHYSICALLY DISABLED PEOPLE

Kumaraguru College of Technology, Coimbatore, India / Aug 2016 – Apr 2017

- Developed an android application for facial recognition using GOOGLE VISION API.
- Developed and deployed the program in SoC with INTEL ATOM processor to breakout board for driving motor using L293D under supervision of Asst Prof. Kaliyappan. (Tools used: Android studio, Putty, proteus, WINSCP)

[Awarded with University department's best-project of the year, 2017]