Amit Kumar

Machine Learning Engineer

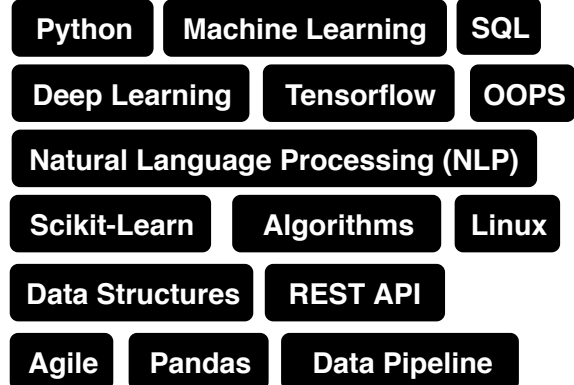✉ amitmac2@gmail.com ☐ +919591572592 ◎ Bengaluru, India ⊙ github.com/amitmac/ ⊕ amitmac.github.io

SUMMARY

- Enterprising professional with **5 years** of total experience and 3.5 years of experience in building **Machine Learning** and **NLP** solutions
- Presently associated with **Wissen Technology, Bengaluru** as **Senior Software Engineer**
- **Ranked 5th** in **Microsoft AI Challenge** India 2018
- Cofounded a startup, Marax AI
- Extensive **project management experience**, **team building**, **leadership**, proficient in gathering requirements, developing and implementing solutions
- Experienced in distributed data processing and performance optimization

SKILLS

`Python` `Machine Learning` `SQL`
`Deep Learning` `Tensorflow` `OOPS`
`Natural Language Processing (NLP)`
`Scikit-Learn` `Algorithms` `Linux`
`Data Structures` `REST API`
`Agile` `Pandas` `Data Pipeline`

WORK EXPERIENCE

Senior Software Engineer - Wissen Technology - *August 2017 - Present*

Project - Intelligent Search for financial research reports

- Worked on intelligent search project. The task is to retrieve the top paragraphs which contain the answer for a given user query from a large corpus of research documents
- Built HTML Parser, triples extraction using dependency parsing, NER, ungrammatical parsing of queries, training word vectors, TF-IDF
- Distributed data processing using multiprocessing. Built Data Pipeline to automate the processing and load in the Elasticsearch database. Added caching mechanism to decrease request time
- Productionized the system on two different datasets - research reports and wiki documents

Project - Natural queries to SQL queries

- Currently working on an in-house project of converting natural language queries to SQL queries
- Using context-free grammar to convert a SQL query into series of actions and using encoder-decoder based RNN (Recurrent Neural Networks) architecture to predict the actions based on the natural language query
- Implemented a paper published by Microsoft Research

Cofounder | Machine Learning Engineer - Marax AI - *February 2016 - July 2017*

Project - Churn Prediction

- Worked for a carpooling client to forecast churn among users. Different models were built for passenger and car owners using Logistic Regression, Random Forest
- Performed feature engineering to get features like frequency of rides, the distance between the source and destination location, users' availability within a particular range around source and destination, etc.
- Helped clients in understanding and retaining the users by understanding the core problems

Project - Best Match

- Worked on best match system for car owners and riders using similar features mentioned above
- Build Flask API for clients to have access to the system. Helped users in getting better matches
- Presented demo to different investors and clients. Created the first version of our website and hosted on AWS

Associate Software Engineer - hCentive Inc - *July 2014 - October 2015*

Project - MA-HIX

- Modified the whole application pages to make them 508 compliant to target the blind users by following the W3C Web standard guidelines
- Worked on a back-office project to handle user issues. Worked on JavaScript, JSPs, Java, Unit tests

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PERSONAL PROJECTS

Paragraph Ranking - Microsoft AI Challenge India - *November 2018 - December 2018*

- Took part in Microsoft AI Challenge 2018 where the task was to rank the candidate paragraphs for each query.
- Performed basic sentence parsing and cleaning
- Used BM25 and different neural net architectures like CNN, RNN, Attention-based models. Finally, I used ensemble of Google BERT model getting MRR score of 0.7079
- Ranked 5th in Phase-I. Finally, I was among top 20 out of 500 teams

Abnormalities in Chest CT Scan - *January 2019 - February 2019*

- Worked on a small image segmentation project where the task was to generate an image highlighting the abnormality location
- Used image augmentation to generate more scenarios followed by U-Net architecture which is a CNN based encoder-decoder architecture. I was able to achieve loss 0.2483 while dice_loss was 0.0616 with val_loss 1.4323 and val_dice_loss 0.3556
- Since the data was less, we can see clearly see overfitting in the above results

Sentiment Analysis - *November 2015 - December 2015*

- Classify product reviews using Machine Learning
- The data was collected from Amazon site using a crawler. The ratings were used to label each review making it a multi-class classification problem
- The model was trained using different techniques including Neural Networks, Naive Bayes Classifier, Logistic Regression achieving accuracy ~80%
- Technologies - Python, Theano

EDUCATION

B.E. Computer Engineering from Netaji Subhas Institute of Technology (now NSUT), 2014

CERTIFICATION AND COURSEWORKS

- Top 20 - Microsoft AI Challenge 2018
- Deep Learning Nanodegree, Udacity
- CS231n: Convolutional Neural Networks for Visual Recognition
- CS224n - Natural Language Processing using Deep Learning
- STAT110x - Introduction to Probability - edX
- Applied Machine Learning by University of Michigan, Coursera
- Descriptive Statistics, Udacity
- ACM ICPC Amritapuri Onsite Regional - Certification of Achievement - 2012

PERSONAL DETAILS

Languages - English, Hindi
Soft Skills - Thinker, Innovator, Collaborator