Ravi Kiran Selvam

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EDUCATION

M.S in Applied Data Science
University of Southern California - Viterbi School of Engineering **May 2021***
B.E. in Computer Science *(Among top 5% out of 180 students)*
Anna University - CEG Campus CGPA- 9.47/10 **April 2019**

RESEARCH INTERESTS - Data Science, Machine Learning, Deep Learning, Natural Language Processing

TECHNICAL SKILLS

Operating Systems: Linux, macOS, Windows
Languages: C, C++, Python (Proficient); Java (Intermediate);
ML Frameworks: Tensorflow, Keras, scikit-learn
Database and Client/Server Technologies: MySQL, MongoDB, Snowflake, Azure Data lake, Flask, Bootstrap, JavaScript
Software Tools: Git, Android Studio, Anaconda

EXPERIENCE

***Data Science Intern,* Motorq** **December 2018 - June 2019**

- Set up the **initial Data Science workflow** and infrastructure for building ML models
- Analyzed **large-scale connected car data** from IoT devices and solved problems such as refueling event detection, idling time detecting, trip completion event detection
- Designed and Implemented **various engine hour metrics, meta-metrics** for different parameters of car data and analyzed the trends across time
- Build the **battery voltage failure prediction model** based on the number of parameters from car data
- Tech stack: **python, numpy, pandas, matplotlib, plotly, scikit-learn, tensorflow, snowflake, Azure Data lake, Azure VM**

***Machine Learning Intern,* Kenome Technologies** **May 2018 - June 2018**

- Built a deep learning model to perform **sequence tagging** for colors, materials, and patterns in text documents
- Built a method for data-annotation by reducing the time complexity of string matching from a naive algorithm using a modified version of the Trie data structure. Observed a maximum F1 score of 0.94 for tagging colors and materials in the testing data set
- Built a dashboard to **visualize the crypto-currency prediction model**
- Tech stack: **python, TensorFlow, Keras, AWS EC2, plotly, d3**

***Software Development Engineer Intern*, Amazon** **May 2017- July 2017**

- Developed prototype features for **Amazon-Fire TV Stick** to integrate marketing notifications using Amazon's internal library and to integrate IMDB ratings with Amazon Prime videos
- Tech: **Java, XML, Software testing, Software design principles**

OPEN SOURCE CONTRIBUTIONS

***Google Summer of Code 2018 Student Developer*, CERN** **April 2018 - August 2018**

- Provided support for advanced deep learning optimizers in the open-sourced **ROOT-TMVA, a data analysis software framework** by CERN
- Implemented deep learning optimization algorithms (SGD, RMSProp, Adam, Adagrad, etc.) in CPU & GPU architectures by exploiting the parallel programming capabilities; my code has been successfully integrated into the new production release of ROOT version 6.16
- Tech stack: **C++, Blas, CUDA, CuBlas**

PROJECTS

Sign Language Translator from Video to Speech (ISL) **December 2018 - March 2019**

- Developed a deep learning model for classifying sign language images to corresponding sign words by transfer learning of the Inception V3 architecture and extended it to videos for generating simple English sentences

- Created the sign language data set for 30 sign words and 25 alphabets which could be classified using just one image frame and trained our model using it
- Got an accuracy of 62.5% on the test set under normal lighting conditions
- Technologies: **python, tensorflow, keras, plotly, opencv, scikit-learn**

Customized Adversarial Image Generator **August 2018 - October 2018**

- Implemented a variation of Fast Gradient Sign Method (FGSM) algorithm to perturb the input image to misclassify it to the target class; Produced perturbed images are indistinguishable to the human eye
- Technologies: **python, numpy, pandas, matplotlib**

Credit Card Fraud Detection **February 2018 - March 2018**

- Developed an ML model using multivariate Gaussian distribution to detect fraudulent credit card transactions
- Trained the model using standard credit card dataset available on Kaggle; Achieved accuracy of 95% on new test data
- Technologies: **python, numpy, pandas, scikit-learn, matplotlib**

RESEARCH EXPERIENCE

Power Graph for Citation Network **August 2017 - November 2017**

- Developed a new data structure (**in C++**) by modifying power graph to represent relationships between author and co-author in a citation network dataset.
- Deduced algorithms to perform queries like finding the bonding value between authors (to find the type of citation between papers) and a similarity index between research papers.

RESEARCH PAPERS PENDING PUBLICATION

- Mahalakshmi G.S*, Makesh Narsimhan Sreedhar*, **Ravi Kiran Selvam***, Sendhilkumar S: Exploiting Bi-LSTMs for Named Entity Recognition in Indian Culinary Science; In proceedings of the 4th international conference on Next Generation Computing Technologies, NGCT 2018; In Communications in Computer and Information Science Series of Springer Journal. (accepted and presented on **November 2018**)

CERTIFICATIONS

- Deep Learning Specialization (series of 5 courses) by Deeplearning.ai, Coursera, **March 2018**
- Machine Learning by Stanford University, Coursera, **December 2017**
- Codechef Certified Data Structures and Algorithms Program (CCDSAP) - Advanced Level, CodeChef, **November 2017**

AWARDS

- Ranked 35th among 250 teams (Amritapuri Regionals) and 30th among 120 teams (Chennai Regionals) **across India** in ACM International Collegiate Programming Contest, **December 2017**
- Won 25 coding competitions in 12 inter-college tech fests (by securing 1st among ~400 participants), **October 2016 - March 2019**

EXTRA-CURRICULAR ACTIVITIES

- **Founder, CEG Codechef Campus Chapter** - Delivered lectures on competitive programming to many college students and trained them to participate in the ACM-ICPC, **September 2018 - March 2019**
- **Problem Setter, Abacus'17 & Abacus'18**, departmental inter-collegiate national-level technical symposium- Organized 5 intercollegiate onsite & online programming contests (HackerRank, CodeChef), Anna University, **March 2017 & March 2018**
- **Volunteer, CEG Linux Users group (CEGLUG)** - Delivered lectures on open source tools to many college students to create awareness about the same, **September 2017 - March 2019**
- **Authored 2 blogs** for beginners on Algorithms and Data Structures with ~10,000 page views, (Link1, Link 2), **March 2016 - May 2017**

LANGUAGES: English, Tamil (Read/Write/Speak)