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   **Apr 2019**
12th grade, Velammal Matric HSS, Surapet   97.08%   **Apr 2015**
10th grade, Velammal Matric HSS, Surapet   98.60%   **Apr 2013**

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

INTERNSHIPS
Data Science Intern, **Motorq**   **Dec 2018 - Jun 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 the car data.

Machine Learning Intern, **Kenome Technologies**   **May 2018 - Jun 2018**
- Learned about Deep Learning and TensorFlow model implementation using AWS Cloud instances

Entity Tagger
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 naive algorithm {$O(n*m)$ to $O(n)$} using a modified version of Trie data structure (n = length of all sentences & m = no. of tags)
- Observed a maximum F1 score of 0.94 for tagging colors and materials in the testing data set

Crypto-currency Prediction
- Built a dashboard to visualize the crypto-currency prediction model using Plotly and d3 libraries

Software Development Engineer Intern, **Amazon**   **May 2017- Jul 2017**
- Learned about software development lifecycle, software design principles, software development, and testing

Amazon-Fire TV Stick
- 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 using Java and XML

OPEN SOURCE CONTRIBUTIONS
Google Summer of Code 2018 Student Developer, **CERN, Switzerland (Remote Project)**   **Apr 2018 - Aug 2018**
- Learnt Git, CUDA, OO design skills and the mathematics behind deep learning optimization algorithms

ROOT-TMVA (Toolkit for Multivariate Data Analysis)
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.) by exploiting the parallel programming capabilities using C++ and low-level libraries (Blas, CUDA and CuBlas in CPU & GPU architecture); my code has been successfully integrated into the new production release of ROOT version 6.16

RESEARCH EXPERIENCE
Power Graph for Citation Network   **Aug 2017 - Nov 2017**
Developed a new data structure 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

COURSE PROJECTS

Sign Language Translator from Video to Speech (ISL)   **Dec 2018 - Mar 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.

Customized Adversarial Image Generator   **Aug 2018 - Oct 2018**

Developed an efficient method for generating adversarial images for MNIST dataset

- 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 that are indistinguishable to the human eye

Credit Card Fraud Detection   **Feb 2018 - Mar 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

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 Nov 2018)

CERTIFICATIONS

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

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, Bootstrap, JavaScript, Flask
Software Tools: Android Studio, Git, Anaconda

AWARDS

- Ranked 35th among 250 teams (Amritapuri Regionals) and 30th among 120 teams (Chennai Regionals) **across India** in ACM International Collegiate Programming Contest, Dec 2017
- Won 25 coding competitions in 12 inter-college tech fests (by securing 1st among ~400 participants), Oct 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, Sep 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, Mar 2017 & Mar 2018
- **Volunteer, CEG Linux Users group (CEGLUG)** - Delivered lectures on open source tools to many college students to create awareness about the same, Sep 2017 - March 2019
- **Authored 2 blogs** for beginners on Algorithms and Data Structures with ~10,000 page views, (Link1, Link 2), Mar 2016 - May 2017

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