Raghunath Diwakara

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I am a technology enthusiast who enjoys problem-solving and building solutions. I want to contribute to the company by building and applying new skills through continual learning.

EDUCATION

New York University (NYU), New York, NY

    M.S., Computer Engineering, *May 2021 - GPA 3.59 / 4.0*

    Relevant Coursework: Machine learning, ML for Cybersecurity, Probability Theory, Statistics for Data Science, Advanced Computer Architecture, OS, Internet Architecture, Advanced Data Structures and Algorithms.

RNS Institute of Technology (VTU), Bangalore, India

    B.E., Electronics and Instrumentation, *July 2017- GPA 3.93 / 4.0*

TECHNICAL SKILLS

Programming Languages: C, C++, Python, Java, JavaScript, Linux Shell, MATLAB, R, SQL
Packages: Pandas, Numpy, Scipy, Seaborn, Tidyverse, SimPy, Scikit-learn, Imbalanced-learn, Keras, TensorFlow
Softwares & Tools: Elasticsearch DB, JQ, REST APIs, MQTT, HTML, Git, LabVIEW, LaTeX, Mathematica, Microsoft Office.
Development Environments: Jupyter Notebook, Eclipse, Code Composer Studio.

WORK EXPERIENCE

Tavant Technologies Inc. (Python, Pandas, Scikit-learn, Imbalanced-learn, SMOTE)   **New York, NY**
Machine Learning Summer Intern, Jun 2020 – Aug 2020
- Devised anomaly detectors, tackled a predictive maintenance problem using over 27 telematics features to make error predictions with an average recall of 92%.
- Implemented feature engineering pipelines to perform imputation and resampling of data using appropriate statistical techniques.
- Built random decision forests - based classification models and evaluated the pipelines to judge for overfitting.

Robert Bosch Center, IISc Bangalore (Python, Linux Shell, MQTT, ElasticSearch, Kibana, Kakfa, Pandas)   **Bangalore, India**
Research Associate (Industrial Internet of Things), Mar 2018 - Jul 2019
- Developed and implemented network architecture and the architecture for sensor gateways.
- Created algorithms in python to analyze real-time factory data, model, simulate, and identify solutions resulting in a 62% reduction in energy consumption.
- Served as point of contact for the industry partners.

Accenture (Java, SQL, SDLC)   **Bangalore, India**
Software Engineer, Sep 2017 – Mar 2018
- Tested web applications using techniques of object-oriented programming.
- Performed requirement analysis, planning, and execution of software testing.

PROJECTS

Cycle-Accurate CPU Simulator (C, C++, Python)
- Designed and implemented a cycle-accurate software simulator for the MIPS ISA subset
- The simulator was designed to perform out-of-order execution of instructions when optimization was possible.

MODBUS Stack (C, C++, Code Composer Studio, TIVA)
- Designed and built the MODBUS stack to contain holding and input registers on a Cortex M4 – based controller.
- Implemented the application layer of the MODBUS RTU protocol to read/write registers.

Spam Filter (Python, Numpy, Scikit-learn)
- Designed a feature selector using email text to identify features with the highest information gain monitoring the entropy.
- Built Naive Bayes classifiers and RBF-regularized SVMs to classifying with up to 98% accuracy on real test data.

FGSM Attack and Bad-Net Defense (Python, Numpy, TensorFlow, Youtube Face Dataset)
- Identified perturbations to carry out a targeted adversarial attack with an average success rate of 96%.
- Detected and fixed poisoned neural networks through identifying spectral signatures and carrying out fine-pruning restoring accuracy to 99%.

Driver System for Scalable IoT (Python, YAML, JQ, TINC, REST APIs, MQTT)
- Developed a sensor onboarding mechanism for multiple protocols including BLE, Serial, MODBUS.
- Polled, detected, and registered the devices automatically when they appeared on the network.

PUBLICATIONS

- Digital Twin for Energy Optimization in an SMT-PCB Assembly Line, Internet of Things and Intelligence Systems, IOTaIS (IEEE, 2018)
- An Implementation of an Industrial Internet of Things on an SMT Assembly Line, International Communication Systems and Networks and Workshops, COMSNETS (IEEE, 2020)