Valentina Robert D'souza

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EDUCATION

Master of Science in Engineering, Aug 2021 – present | Baltimore, United States
Biomedical Engineering (Focus area: Data Science),
The Johns Hopkins University, GPA: 4.0/ 4.0
Coursework: Machine Learning for Medical Applications, Biomedical Data Science, Introduction to Computational Medicine: Imaging and Physiome, Precision Care Medicine, Systems Pharmacology and Personalized Medicine
Teaching Assistant: Gateway Computing: Python, Neurobiology Cellular and Systems

Bachelor of Engineering, Biomedical Engineering, Jul 2017 – May 2021 | Mumbai, India
University of Mumbai, GPA: 9.8/ 10.0

SOFTWARE/TECHNICAL SKILLS

Python (Scikit-learn, pandas, NumPy, SciPy) | R | MATLAB | Bioinformatics | Machine Learning

Deep Learning (Tensorflow, keras) | Signal Processing | Natural Language Processing | Git and Version Control

Data Visualization | Statistical Data Analysis | IOT

PROJECTS

Neurologic injury prediction using Machine Learning Aug 2021 – May 2022
- Investigated capabilities of demographic and oxygen level based features in predicting neurologic injuries through 3 baseline models including GLM, K-nearest neighbor, and random forest model
- Improved performance of baseline model by 30% by addition of time-series data, blood product, and anti-coagulant based features

Pharmacologic Drug Modeling Apr 2022
- Utilized MATLAB to model a Pharmacologic drug and leveraged sensitivity analysis to identify parameters influencing model
- Created and deployed an interactive app using Shiny package in R quantifying impact of missed dose on seizure-free survival

Prediction of Huntington's disease Oct 2021
- Analyzed brain nuclei volume change variation between patients and healthy controls employing statistical t-test for comparison
- Trained a Random forest model incorporating correlation between patient age and nuclei volume and other features to predict Huntington's disease with an accuracy of 92%

Breast Cancer Detection using Convolutional Neural Networks Sep 2020 – Apr 2021
- Accomplished a project involving predicting if a tumor is benign or malignant based on features extracted from 2 different datasets
- Implemented VGG-16 and ResNet-50 models to classify tumors with transfer-learning, with ResNet-50 having highest accuracy of 96%

Parkinson's Disease Detection Jul 2020
- Examined 4 different predictive machine learning models in accurately detecting presence of Parkinson’s disease in an individual
- Compared performance of XGBoost, Support vector machine, K-nearest neighbor, and Random forest model in detecting Parkinson's, with best being XGBoost with accuracy of 94%

Humidity sensing and alerting system Apr 2020
- Designed a humidity sensing and alarming system using BOLT IoT device interfaced with Analog Humidity Sensor
- Programmed system to send and retrieve data from cloud to keep track of humidity sensor level exceeding safety limits and alerted user using Telegram with a time lag of less than 2 seconds

PROFESSIONAL EXPERIENCE

Graduate Research Assistant, *Kennedy Krieger Institute* Jun 2022 – present | Baltimore, United States
- Constructed a workflow for pre-processing high dimensional CEST data and generated training data by Lorentzian lineshape based fitting approaches
- Developed a ML model for speeding parameter quantification process of CEST (chemical exchange saturation transfer) MRI images by a time factor of 85%

Graduate Student Researcher, Oct 2021 – present | Baltimore, United States
Laboratory of Computational Intensive Care Medicine
- Leading a research initiative aimed at preprocessing and extracting meaningful features from physiologic time series Intracranial pressure waveforms from brain recorded at frequencies higher than 125 Hz
- Identified distinct groups (phenotypes) in brain- injury patients utilizing clustering techniques to predict outcomes in unique groups

Winter Intern, *Siemens Healthineers* Dec 2019 | Mumbai, India

- Assisted preventive maintenance (PM) of about 10 different imaging modalities including MRI, Cath lab, Hybrid CT, etc
- Guided multiple modality installation in hospitals and expedited back-end work in Customer Service Department employing SQL to query financial data

COURSES AND SPECIALIZATIONS

Data Science: Foundations Using R | Foundations of Mining Non -Structured Medical Data | Data Structures and Algorithms

Internet of Things and Machine Learning

PUBLICATIONS

Book Chapter on Assistive Technologies used for Differently Abled Individuals Nov 08, 2021

Modern Technological Intervention Advancements for the physically challenged and disabled population- Cambridge Scholars

- Reviewed assistive technologies for individuals suffering from Autism Spectrum Disorders, Vision loss, Hearing loss and Dual-Sensory loss
- Integrated and analyzed information on developments and research in technologies used for differently abled individuals and summarized them

ACHIEVEMENTS

Department Ambassador Award, University of Mumbai Mar 2021

EXTRA CURRICULAR ACTIVITIES

XEURON 2020 Feb 2020

- Volunteered in organizing a national technical event for Biomedical Engineering students involving AI and 3D- printing workshops

Technical Poster Presentation, Mar 2019

The Institution of Engineers (India): IE(I)-TSEC

- Participated in a national level technical symposium and presented a poster on BLUE-BRAIN, and competed with 25 groups.