Nikhil Pareek

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EDUCATION

The University of Texas at Dallas, TX, US 08/06/2018 - 12/12/2020
Master of Science in Computer Science GPA: 3.62/4
Invited as a speaker and instructor at the Annual AI Conference, Dallas, US, 2019
Third place at HackAI (Team-FirstGuard) & HacksForHumanity (Team-Care) Hackathon, Dallas, US, 2018

M.S.Ramaiah Institute of Technology, Bangalore, India 08/01/2010 – 06/01/2014
Bachelor of Engineering in Mechanical Engineering GPA: 8.5/10
Awarded Junior Research Fellowship from Govt. of India

SKILLS

Python (Numpy, Keras, Scipy, Scikit-learn, Tensorflow, BrainFlow API, Bleak BLE, PySpark), Amazon Web Services(EC2, SQS, Lamda, Sagemaker, DynamoDB, Gamelift, Lumberyard), Signal Processing(Time-Frequency Analysis: Fast Fourier and Wavelet Transform, Band-pass filters, Signals: EEG, ECG, PPG, Respiratory, Tidal Volume), BLE Network Protocol (GATT, Serial Port Service), Biofeedback System Integration(OpenBCI Cyton, Polar H10, Shanren Beat, FitMi Motion Interface), Java, Scala, Git, Visual Studio Code, Asana

WORK EXPERIENCE

Prism Technology Holdings Inc. (New York, US) **– Machine Learning Engineering Associate** 08/26/2020 – 12/23/2020

- **Built a Biofeedback gaming application using biomarkers of stress and anxiety**(website)
  - Developed an end to end multi-threaded, real time application that detected the "Affective" state/stress of the user using physiological and motion data, in Python
  - Designed a closed-loop feedback gameplay algorithm with sensor modalities such as Electrocardiogram (ECG) and Respiration (3 axis Inertial Measurement Unit) with a chest-worn device (demo game)
  - Presented the idea as a Co-founder at *NYU Entrepreneurs Challenge*, 2020-21 and selected into the Semi-finals (demo app)

- **Designed a Data Streaming Service**
  - Utilized Bluetooth Low Energy Service Protocol such as General Attribute Protocol (GATT) descriptors for reading and writing data on devices such as fitness trackers, heart monitor by implementing GATT Service-Characteristic-Descriptor behavior API
  - Designed and evaluated a communication strategy (b/w between Serial Port interface over Bluetooth Low Energy interface) using a client-server architecture by evaluating Connection latency vs Application latency for a Heart Rate Monitor device

- **Built a Respiration Rhythm Estimator**
  - Engineered a breath detection algorithm with the help of Principal Component Analysis using a three-axis accelerometer
  - Devised a methodology implementing Cardiorespiratory intervention in users using Pearson and Cross-correlation technique

- **Built a Heart Rate Monitor System**
  - Remodeled Enzee Heart Rate detection algorithm for Pulse detection, Heart Rate Variability and RR interval from ECG signals
  - Trained and tested a stress detection model on physiological data utilising electrocardio-gram, respiration and 3-axis accelerometer data, recorded by a chest-worn device using K-NN classifier using WESAD Dataset

Texas Biomedical Device Centre (Dallas, US) **– Machine Learning Intern** 05/10/2019 – 05/05/2020

- **Human Activity Recognition using Recurrent Neural Network (RNN):** (project presentation)
  - Trained and tested a (Long Short-term Memory model) model to classify "natural" vs "impaired" upper-body movement amongst stroke patients in rehabilitation using Inertial Measurement Units (IMU's) in Python with 86% accuracy

Fxkart.com (Bengaluru, India) **– Senior Business Analyst** 10/08/2015 – 12/08/2017

- **Automobile-Insurance Recommendation System:**
  - Spearheaded as a lead,the development of an online robo-advisory service and acted as a liaison with the investors

Indian Institute of Science (Bengaluru, India) **– Junior Research Fellow** 03/10/2015 – 09/20/2015

- **Numerical Modelling using Tensor Systems:** (Paper)
  - Used Tensor system and Cross-correlation as image processing technique to model elastic behaviour of biomaterials