Javed Ahmad

https://github.com/javi-99

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Personal Statement

A researcher with a proven history of problem-solving and meeting project deadlines. Being equipped with a theoretical and practical understanding of signal processing, machine learning & deep learning, by undertaking in-depth studies including the identification & modification of state of the art, I can believe out of the box for tailored alternatives.

Experience

- **Information Technology University**   Lahore, Pakistan
  Research Associate at Blockchain Lab   *Jul. 2019 – Present*
  - Supervisor: Dr. Ali Ahmed, postdoc mit, usa
  - Conduct research and leading projects with a focus on applications of machine learning & deep learning in Blockchain Technology

- **Information Technology University**   Lahore, Pakistan
  Research Assistant & Industrial Collaborator at SPIDER Lab   *Sep. 2017 – Jul. 2019*
  - Supervisor: Dr. Ali Ahmed, postdoc mit, usa
  - Conducted research with a focus on applications of signal processing, machine learning & deep learning in fault diagnosis and prognosis of mechanical machinery.
  - I led & implemented the allocated projects in the industry as part of a cooperation between industry and the SPIDER Lab.

- **SUPARCO**   Lahore, Pakistan
  Sub-Engineer (Communication Satellite)   *Oct. 2011 – Oct. 2017*
  - Conducted trend analysis and anomaly detection in the telemetries of satellite subsystems.

Education

- **Information Technology University (ITU)**   Lahore, Pakistan
  Master of Science in Electrical Engineering   *Sept. 2017 – Aug. 2019*
  - Thesis: Fault Diagnosis & Prognosis of Rotating Machinery using Vibration Signal Analysis
  - Advisor: Dr. Ali Ahmed, postdoc mit, usa
  - Research Lab: SPIDER lab   WEBPAGE
  - Focus: Signal Processing & Machine Learning in Industrial Informatics
  - Selected Courses: Advanced Digital Signal Processing, Machine Learning, Advanced Mathematics

- **University of Central Punjab (UCP)**   Lahore, Pakistan
  Bachelor of Science in Electrical Engineering; GPA: 3.50   *2013 – 2017*
  - Project: Design & Implementation of Octocopter
  - Advisor: Dr. Ali Nasir, phd university of michigan, usa
  - Focus: Control System & Signal Processing

- **SUPARCO Institute of Technical Training (SITT)**   Karachi, Pakistan
  Diploma of Associate Engineer (DAE) in Electronics ; Score: 83%   *2008 – 2011*

Skills & Expertise

I spend most of my time with scikit-learn, keras, tensorflow and pytorch (equally proficient) in python. My ability set includes comprehension and implementation of the recent research papers related to my field, feature selection & pre-processing, scientific computing and technical writing. My skill set for technology involves but is not restricted to the following:

- Tensorflow
- Python
- Numpy
- R, bnlearn
- C++
- Pytorch
- Scikit-learn
- Pandas
- Matlab,

Projects

- **Open Source**
  - **GearBox Faults Detection using SincNet Architecture**   CODE
    Fault diagnosis and prognosis of an industrial gearbox with SincNet architecture (A deep learning model)where the first layer have of CNN is modified using DSP tools to make human interpretation
  - **Predicting Faulty Regime of Train Car (phm2017)**   CODE
    A PCA based anomaly detection technique to identify the faulty suspensions of a train bogie.
  - **Pruning of Deep Neural Networks using Convex Optimization**   CODE
    Formulated into a convex problem and solved using Keras with tensorflow & cvxpy to significantly sparse the weight matrix with accuracy score of 0.84.

- **Industry Projects**
  - **Vibration Sensor Data Validation**   **INTECH**
    Designed a complete solution to validate the time series vibration data of sensors mounted with different methods. The solution is based on intelligent feature selection utilizing DSP tools and training the discriminative classifiers to detect the fault in the sensor mounting.
  - **Hardware & Front-end Software Interface**   **SpaceTech Engineering Consultants**
    Designed electronic hardware and software interface of prototype turbines for a Hydraulics & Fluid Mechanics Lab. I successfully performed hardware calibration, developed codes/algorithms to display the required parameters in window application.

Research

- **In progress**
  - LSTM with Wavelets Based Vibration Signal Processing for Fault Detection of a Gearbox. **Javed Ahmad** and A. Ahmed. Have to Submit in *IEEE Transactions on Industrial Informatics,* 2019.
  - Learning of Faults in rotating machinery using SincNet. **Javed Ahmad**, F. Shamshad and A. Ahmed. Have to submit in *Machine Learning and the Physical Sciences, Workshop, NeurIPS,* 2019.

Rewards & Honors

- Awarded Graduate Research Fellowship in ITU for my academic performance.
- Awarded Gold Medal for getting first position in the annual exhibition of final year projects at UCP.
- Dean's Honor roll for 1-2 semester during my BS.
- First position all over Pakistan in Robo-Sprint competition 2014.

Teaching Experience

- **Teaching Assistant for Machine Learning**
  Information Technology University, Lahore.

- **Teaching Assistant for Power System Analysis**
  Information Technology University, Lahore.

- **Teaching Assistant for Calculus and Analytical Geometry**
  Information Technology University, Lahore.

Academic References

- **Dr. Ali Ahmed**
  Assistant Professor, Dept. of Electrical Engineering
  Information Technology University, Lahore
  ali.ahmed@itu.edu.pk

- **Dr. Mahboob Ur Rehman**
  Assistant Professor, Dept. of Electrical Engineering
  Information Technology University, Lahore
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- **Dr. Ali Nasir**
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