Raza Ul Azam

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WORK EXPERIENCE

January' 20 - June' 20

Masters Thesis - Machine Learning

Robert Bosch GmbH - Bosch Center for Artificial Intelligence (BCAI)

- Worked on Computer vision problems - Image classification and Video frames semantic segmentation
- **Tasks performed:**
  - Implemented several deep Neural networks from scratch in PyTorch as well as TensorFlow and performed scaling for accuracy (3%) and speed (5x) improvements
  - Computed uncertainty estimates from the models using concepts from Bayesian probability theory, statistics and linear algebra
  - Identified complex structures in the data that impact models performance
  - Designed a new classifier for detecting extraneous and noisy data and prototyped using different Machine learning models in Scikit-learn (94% accuracy)
  - Used Git for collaborating internally and followed best Python programming practices
- **Tools Used:** Python 3.7, PyTorch, TensorFlow, OpenCV, Scikit-learn, Pandas, Linux/Unix shell, Git, Imblearn, Seaborn

April' 19 - September' 19

Intern - Machine Learning

Robert Bosch GmbH

- Worked on anomaly detection techniques while processing video frames
- **Tasks performed:**
  - Created custom Keras layers for quantizing Neural networks and injecting faults
  - Created custom Keras layers for detecting faults and achieved 98% accuracy
  - Implemented anomaly detection methods based on Recurrent networks and Auto-encoders in TensorFlow and Keras and optimized using Bayesian techniques
  - Detected anomalies while processing time-series data (90% accuracy)
- **Tools Used:** Python 3.7, Keras, TensorFlow, Scikit-learn, Pandas, Linux/Unix shell, Git

August' 18 - January' 19

Working Student - Machine Learning and Optimization

Schaeffler Technologies AG & Co. KG

- Worked on parameter optimization and data analytics tasks
- **Tasks performed:**
  - Implemented different variants of Evolutionary algorithms in C++14
  - Developed CUDA kernels for speed efficiency (6x)
  - Fitted Machine learning models on automotive datasets using Scikit-learn in Python
- **Tools Used:** C++14, Python 3.7, SQL, TensorFlow, Scikit-learn, Pandas, MATLAB, CUDA

April' 18 - July' 18

Working student - Software Development

Fraunhofer IIS

- Worked on extension of an audio rendering library - MPEG-H project
- **Tasks performed:**
  - Improved rendering algorithms and added new functionalities in C++14
  - Performed test simulations on MATLAB and in a real environment
- **Tools Used:** C++14, MATLAB, Git

EDUCATION

October' 17 - Present

Master of Science in Communications and Multimedia Engineering (CME)

Friedrich Alexander Universitaet Erlangen-Nuremberg (FAU)

Note: 1.8/5.0 (German Grading System)

Specialization: Machine Learning

Important courses: Machine Learning (Pattern Recognition, Pattern Analysis), Deep Learning, Image and Video Compression, AWS for Machine learning and MySQL bootcamp (online)

August' 13 - May' 17

Bachelor of Science in Electrical Engineering

Lahore University of Management Sciences (LUMS)

Note: 1.4/5.0 (German Grading System)

Bachelor Thesis: *Autonomous Gas Pipeline Inspection using UAV*

- Developed an autonomous UAV (MikroKopter) using Computer Vision algorithms (for camera and laser scanners) and Sensor fusion concepts
- **Tools Used:** Robot Operating Sytem (ROS), C/C++, Linux, MATLAB

SKILLS

Python 3.7, C++14, SQL, R, MATLAB, CUDA

Programming languages

OpenCV, Pandas, Scikit-learn, Seaborn, Imblearn, Scikit-image

Packages

PyTorch, TensorFlow, Keras

Machine learning frameworks

Git, GitLab, MLflow, Bitbucket

Version control

Amazon Web Services (AWS)

Cloud computing services

Flask, HTML

Web technologies

Spark, MapReduce model

Big data technologies

MySQL

Databases