Balaganesh Mohan

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WORK EXPERIENCE

Research internship, *Aachen/Maastricht University* 06/2020 – 11/2020 | Netherlands
- Utilized PyTorch framework on high performance computing Linux cluster to train CNN models to recognize tumor mutations in rectal cancer cell images.
- Ensembled three different CNN models that can predict mutations with an accuracy of 96%, compared to the previous state of the art of 92%.
- Coordinated with two professors across biology and data science faculties.

Teaching assistant, *Maastricht University* 02/2020 – 02/2021 | Netherlands
- Assisted with teaching and grading courses including Machine learning, data mining, data structures and natural language processing.
- Handled practical labs to assist students with hands on experience in machine learning and python programming.

Junior Telecommunications Engineer, *Reliance Jio Infocomm limited* 03/2017 – 12/2018 | India
- Designed optimal LTE core networks with GPON guidelines using AutoCAD and QGIS.
- Analyzed network performance data to carry-out benchmark evaluations.
- Supported deployment team on product and technology inquiries.

PROJECTS/PUBLICATIONS

Master Thesis
- Authored a dissertation "Video Based Emotion Recognition with Spatio-Temporal Neural Networks"| Grade: 8/10
- Designed a CNN-based model that can learn Spatio-temporal features in 3D data with linear time and another video based vision transformer model, employing spatio-temporal self attention.
- Both designs performed 15% better than current state-of-the-art emotion recognition techniques.
- Research paper currently accepted at ACII-2021.

Building a Chatbot to Assist Survivors of Sexual Harassment
- Collaborated with fellow students to create a chatbot utilizing natural language processing with success rate of 98% for the identification of a harassment-or-not case.
- Locations and dates are identified with more than 90% accuracy and time occurrences prove more challenging with almost 80%.
- Won the best paper award at data science for social good workshop in ECML PKDD conference - 2019

Mining Books for Information
- NLP techniques like word2vec and t-SNE, combined with libraries such as TextBlob and NLTK, were used to mine useful information such as chapter sentiment, character relationships, and narrative specific details from fictional books.

Forex Market Prediction
- A group project to investigate the use of neural networks such as LSTM's in combination with traditional heuristics such as technical indicators to predict the Forex market based on the historical values.

EDUCATION

Master of science, Data science, *Maastricht University* 2019 – 2021 | Netherlands
***Relevant coursework*:** Algorithms for big data, Data mining, Data modelling, NLP, Computer vision.

Bachelor of Engineering, Electrical and Electronics, *Anna university* 2012 – 2016 | India
Relevant coursework: Calculus, Linear algebra, Control systems, Digital signal processing.

SKILLS

- **Programming:** Python, HTML/CSS, Shell Scripting.
- **Machine Learning:** Proficiency in object-oriented design. Developed several ML pipelines using TensorFlow, PyTorch, Keras. Worked extensively with Sklearn, NumPy, and Pandas for wide range of problems. Visualizations using Matplotlib and Plotly.
- **Data Modelling:** Deep understanding of bias-variance trade-off in models, proper training\testing techniques, pitfalls, feature creation & selection, class imbalances, ensemble methods. Predictive modelling using interactive technologies such as Jupyter notebooks..
- **Database/Server:** SQL, SPARQL, Excel.