SUPRATIM MANNA

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SUMMARY

I have recently completed my MS (by Research) degree in Electrical Engineering from the Indian Institute of Technology Kharagpur and I have already submitted my thesis. My domain of work is **machine learning in signal processing** and I have expertise in **graph-based learning**. One of the most important goals of my work is to develop various robust graph-based algorithms to perform the clustering and classification tasks. I have also worked on an MHRD sponsored project named **Development of Advanced Holter Monitor**.

EDUCATION

Master of Science (by Research) *June, 2020*
Indian Institute of Technology Kharagpur
Major in Machine Learning in Signal Processing
Department of Electrical Engineering
Current CGPA: 8.82

Bachelor of Engineering *2015*
Indian Institute of Engineering Science And Technology, Shibpur
Department of Electrical Engineering
CGPA: 8.04

Higher Secondary *2011*
Board: West Bengal Council of Higher Secondary Education
Marks: 90.6%

COURSEWORK INFORMATION

Pattern Recognition and Image Understanding, Adaptive Systems and Signal Processing, Convex Optimization in Control and Signal Processing, Statistical Signal Processing, Computational Methods and Algorithms in Signal Processing.

NPTEL Course: Deep Learning and Visual Computing.

EXPERIENCE (2+1.5 YEARS)

Department of Electrical Engineering, IIT Kharagpur September, 2017 - Present
Role: Junior Project Officer

Research Experience: Hardware design for advanced Holter monitor, printed circuit board (PCB) design, micro controller coding, android application development.

Primetals Technologies India Private Limited, Kolkata March, 2016 - August, 2017
Designation: Commissioning Engineer

Experience: Plant automation, setting up PLCs (Siemens PLC), writing PLC logic, designing HMI.

PROJECT DETAILS

Title : **Development of Advanced Holter Monitor with Extended Recording and Episode Detection**
Work details :

- Designing and development of a small portable 12 channels holter monitor to acquire 12 different ECG signals.
- Processing of the ECG signal using Teensy 3.6 processor and writing the micro controller coding.
- Development of an android application to record and plot the ECG signals.

THESIS DETAILS

Title: **Graph-based Learning using Multiple Views**
Work details :

- Represent the data set as a graph and then learn the optimal graph similarity matrix that can divide the data set into some clusters and can also perform semi-supervised classification on the given data set.
- Use multiple views or multiple distinct feature sets of data set which give different partial information about a data set thus improving the graph-based learning performance.
- Incorporate the kernel method to consider the nonlinearity present in the data set and to solve the issue of choice of kernel, multiple kernel learning is also incorporated to improve the learning performance.
- Development of several robust graph-based learning algorithm by integrating multiple views and multiple kernel learning.

PUBLICATIONS

- **Robust Kernelized Graph-based Learning** : accepted in **Pattern Recognition, Elsevier, 2020**.
- **Low-Rank Kernelized Graph-based Clustering using Multiple Views** : accepted in **National Conference on Communications (NCC), 2020, IIT Kharagpur**.
- **Kernelized Graph-based Multi-view Clustering on High Dimensional Data** : accepted in **National Conference on Communications (NCC), 2020, IIT Kharagpur**.

RESEARCH INTERESTS

Machine learning, Graph-based learning, Deep Learning, Graph neural network, Kernel learning, Signal processing.

STRENGTHS & SKILLS

Software skills : Matlab, OrCAD, Cadence, Android Studio.
Languages : Python, C, Java, Micro controller coding in Arduino IDE.
Hardware skills : Printed circuit board (PCB) design.
Deep learning architectures and Applications : Neural Network, Graph Convolution Neural Network, CNN, RNN, Keras, TensorFlow, PyTorch, Computer Vision, Natural Language Processing.

LANGUAGES

English, Bengali, Hindi.

EXTRACURRICULAR ACTIVITIES

Calisthenics, Sports, Trekking, Parkour.