Deepa Tilwani

PhD Student @ AIISC

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Summary

Experience in interdisciplinary research involving analyzing, evaluating, pre-processing, and improving current models for neurological signals (EEG/ECG). Proficient in collaborating with high-performing teams to build artificial intelligence/machine learning solutions for providing suitable and optimal solutions to health specialists. Open for collaboration, research work in the field of data science, machine learning or artificial intelligence. Interested in developing a better problem-solving strategy for challenging problems, and learning new technologies and tools if the need arises.

Research Interests

Machine Learning, Deep Learning, Neuroscience, Dynamic Casual Modelling for EEG/fMRI, Signal Processing, Artificial Intelligence for Health Care.

Work Experience

Graduate Research Assistant

Columbia, SC, USA.

Artificial Intelligence Institute, University of South Carolina

August 2022 - Present

- Analysing neuroscience data and implementing machine learning models.
- Working on implementing Dynamic Casual Modelling for EEG in Python3.

Visiting Research Intern

Columbia, SC, USA.

Artificial Intelligence Institute, University of South Carolina

September 2021 - June 2022

- Adopting, utilizing and developing new approaches, methodologies for Lesion Mapping and classification in Aphasia.
- Actively participating in projects with research group at institute.
- Building and implementing architecture road-maps for next generation Artificial Intelligence solutions for collaborators.

Remote Research Intern

Remote - Columbia, SC, USA.

Artificial Intelligence Institute, University of South Carolina

October 2020 - August 2021

- Planning and executing challenging technical problems.
- Organizing, analysing, pre-processing of ECG signals, using signal processing techniques.
- Designing pipeline for Autism likelihood in infants using Machine Learning.

Graduate Teaching Assistant

Jaipur, Rajasthan, India

The LNM Institute of Information Technology

August 2019 - May 2021

- Assisted and evaluated undergraduate students in
  Computer Network, Data Structure,
  Database Management System and Advance Programming lab work.

Data Science Intern

Remote

The Sparks Foundation

August 2020 - September 2020

- Pre-Processing of the data set provided using numpy and pandas libraries in python.
- Extracting valuable information from data set.
- Worked on creating models using supervised machine learning techniques.

Education

The University of South Carolina

Columbia, South Carolina, USA

PhD (Computer Science and Engineering)

2022 - Pursuing

- At Artificial Intelligence Institute
- Co-advised by Dr. Amit P. Sheth and Dr. Christian O'Reilly

The LNM Institute of Information Technology

Jaipur, Rajasthan, India

Masters in Technology (Computer Science and Engineering)

2019 - 2022

- CGPA : 7.42

Govt. Women Engineering College (GWECA)

Ajmer, Rajasthan, India

Bachelors in Technology (Computer Science and Engineering)

2014 - 2018

- Percentage : 67.4

Queen Mary's Girls School *Ajmer, Rajasthan, India*

Intermediate - 12th *2013-2014*

- Percentage : 68.4

Queen Mary's Girls School *Ajmer, Rajasthan, India*

High School - 10th *2011-2012*

- CGPA : 7.2

Honors & Awards

International

Sept 2020 **Jayana Clerk Fellowship ,** ($15000) For supporting my stay at AI Institute as a Visiting Intern *Columbia SC*

Sept 2020 **2nd Prize,** ($100) LINZ Ars Festival - BR41N.IO HACKATHON *Linz*

July 2020 **2nd Prize,** ($300) BR41N.IO: Brain-Computer Interface Designers Hackathon *Austria*

Domestic

2016 **1st Place,** Poster Presentation on AR and VR Technology *GWECA*

2015 **3rd Place,** Coding Challenge : Toast to Code- C Language *GWECA*

2012 **Silver Prize,** National Science Olympiad (NSO) *Ajmer*

Projects

Lesion Symptom Mapping in Post-Stroke Patients for Aphasia using Structural MRI's and predicting Picture Naming Task. *Columbia,SC,USA*

PhD Student *January 2022 - Present*

- Analysing damages caused by Aphasia in left hemisphere of brain using voxel damage percentage in the MRI.

Predicting likelihood of Autism in infants using ECG's. *AI Institute University of South Carolina*

Research Intern *Oct. 2020 - June 2022*

- Analyzed ECG data-set of infants for early detection of Autism.
- Pre-processing, feature extraction and developing models using Machine Learning and Deep Learning algorithms. (publication under review)

Data Analysis of ECoG Data *Remote-Linz*

Hackathon Project *Sept. 2020*

- Analyzing an ECoG data-set having the data of rock paper scissor hand movements or hand-poses from an epilepsy person in order to optimize pre-processing, feature extraction and classification algorithms. Compared machine learning algorithms results with state-of-the-art algorithms.

Motor Imagery EEG BCI Data Analysis *Remote- Austria*

BR41N.IO Brain Computer Interface Designers Hackathon Project *July. 2020*

- Analyzed a motor imagery BCI data-set from a chronic stroke patient in order to optimize pre-processing, feature extraction and classification algorithms. Compared results with state-of-the-art algorithms.

Freelancer Website *GWECA*

Major B.tech Project *Dec 2017- April 2018*

- Website for final year project submission.
- Where user or freelancers registers themselves to search or request needed jobs of their interest.
- Any project or job can also be added by the companies who are looking for respective candidates who can willingly complete the projects provided.

Publications

Masters of Technology - (Thesis) *July, 2022*

Advised by Dr. Sakthi Balan Muthiah and Dr. Amit P. Sheth *The LNM Institute of Information Technology, Jaipur, India*

- Predicting Familial Likelihood of Autism Spectrum Disorder in Infancy Using ECG (link)

INTERNATIONAL CONFERENCE ON DATA DRIVEN COMPUTING and IOT (DDCIOT-2021) *20-21 MARCH,2021*

- Porwal S., Patel C.K., Tilwani D., Bansal S.K. (2021) A Comparative Study and Tool to Early Predict Diabetes Using Various Machine and Deep Learning Based Techniques. In: Mathur R., Gupta C.P., Katewa V., Jat D.S., Yadav N. (eds) Emerging Trends in Data Driven Computing and Communications. Studies in Autonomic, Data-driven and Industrial Computing. Springer, Singapore. DOI: https://link.springer.com/chapter/10.1007/978-981-16-3915-9_29

Skills

Tools and Technologies C, Python, NumPy, SciPy, Pandas, Scikit-Learn, Visualizations(Matplotlib, Seaborn), NumPyro, LaTeX, Machine Learning, Matlab, Dynamic Casual Modelling for EEG, Digital Signal Processing, MNE, and Data Analysis for EEG/ECG signals.

Languages Hindi, English

Certifications and Training's

Data Analytics Virtual Training Program *Quantium*

Virtual Training *Sept. 2020*

- Analysed data of a daily store.

Fundamentals of Scalable Data Science *IBM*

Certification *July. 2020*

- Introductory Course on Data Science by IBM

Python for Everybody Specialization *Coursera*

Certification *April. 2020*

- Specialization Course for Python.

Indian Space and Research Organization (ISRO) *Jodhpur, Rajasthan, India*

Summer Training Program - Web Developer *Jun. 2017 - July. 2017*

- Implemented back end using MySql which is communicating with client, along with two other team members who wrote the php logic's and designed front end.

Government Women Engineering College *Ajmer, Rajasthan, India*

Website Developer *Jan. 2016 - Mar. 2016*

- Designed and managed website with other team members for college technical festival.