ML/DL based biomedical signal analysis and processing for disease identification and related hardware implementation

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September 6, 2023

Agenda

- Introduction
- Goals
- Stretched Goals
- Learnings
- Future Updates
- References

Disease Identification using ML/DL

- ML/DL techniques to process and interpret biomedical signals, aiding in the identification and monitoring of diseases.

- This will offer early diagnosis and personalized treatment opportunities.

Goals

- Data Collection from some hospital
- Preprocessing of the obtained data
- Feature Extraction
- ML/DL Model Training
- Validation
- Disease Identification
- Integration with the hardware

Streched Goals

- Biomedical Signal Conditioning
- Further optimize the algorithm in terms of memory consumption and its time complexity

Learnings

- Learn the broad types of ML techniques (Unsupervised Learning, Reinforcement Learning, Regression, Classification Learning)
- Learn about Evaluation and Cross-Validation
- Learn the concepts of Linear Regression, Decision Tress and Over-fitting
- Learn the KNN algorithm
- Created the repo and updated it with the current progress

Future Updates

- Learn the next module of NPTEL.
- Set up the hardware
- Implement the models on hardware parallely

References

- NPTEL Playlist1 - https://onlinecourses.nptel.ac.in/noc23_cs18/preview
- NPTEL Playlist2 - https://archive.nptel.ac.in/courses/106/105/106105152/
- Link to Dataset used for learning - https://www.kaggle.com/datasets/kaushil268/disease-prediction-using-machine-learning?resource=download
- Link to Project's Public Repo - https://github.com/archana-9430/Final-year-project-Biomedical-Signal-Analysis/blob/main/Presentation/Presentation-1.tex

Thank you

Appendix