Senthil Palanivelu

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PROFILE:

- Background in computer science with a keen interest in AI Engineering and Machine Learning.

SKILLS:

- Python, R, AWS, GitHub, MATLAB, R Shiny, Excel, Jupyter Notebook, Docker, VS code
- Classification, Regression, Clustering, Decision Tree, Random Forest, Optimization, Feature Engineering, CNN
- GitHub Copilot, AI agents, Chatbot, LLM, Prompt Engineering, RAG, Finetuning

PROFESSIONAL EXPERIENCE:

Bioinformatician I, Brigham and Women's Hospital Sep 2022 – Dec 2024

- Led data harmonization projects to standardize EMG, ECG, and EEG channel configurations, units, and sample rates across cohorts, delivering an analysis-ready dataset and a reproducible HTML workflow with scripts to streamline audits and replication efforts.
- Developed and deployed web applications using R, leveraging Shiny Proxy, Docker containers, and AWS EC2 for scalable deployment of R Shiny applications.
- Validated and deployed machine learning models for automated sleep staging and brain age prediction, enhancing accuracy and clinical applications.
- Automated Python package distribution across multiple platforms using GitHub Actions, improving efficiency in software deployment and maintenance.

Research Associate, Battelle Center for Mathematical Medicine, Nationwide Children's Hospital Sep 2021 - July 2022

- Developed a MALTAB based data analysis pipeline for detecting spindles and slow oscillations
- Applied K-clustering algorithm to categorize the spatial patterns of slow oscillations
- Studied the neurophysiology of sleep through the lens of multi-taper spectral analysis

Research Data Analyst I, **Department of Psychological & Brain Sciences, Boston University** Apr 2020 - Aug 2021

- Developed computing tools for multimodal analysis of large-scale connectivity structures in spontaneous and task-active rhythmic brain activity, advancing neuroimaging research.
- Implemented and supported statistical analyses and processing pipelines in Python for behavioral, EEG, and multimodal neuroimaging analysis, including MEG resting-state and volumetric data.

Clinical Research Coordinator II, **Psychiatry Neuroimaging Lab, Massachusetts General Hospital** Jan 2019 - Mar 2020

- Developed a CNN encoder-decoder deep learning model for brain MRI segmentation
- Designed and implemented image processing pipelines using Python and shell scripting to automate and streamline neuroimaging workflows.

Research Assistant, **IT Research Computing, University of Massachusetts Boston** Jul 2016 - Aug 2017

- Developed programs for data retrieval, processing, and visualization using Python and UNIX shell scripting to monitor HPC compute usage, optimizing resource tracking and utilization.
- Managed high-throughput data processing in Linux HPC clusters using UNIX shell scripting, improving efficiency in large-scale computational workflows.

IT Specialist, **Mphasis, Pune, India** Oct 2012 - Feb 2014

- Worked on HP Storage Services Management System (SSMS) Backup and Restore, ensuring data integrity and reliability.
- Performed client data collection, restoration, and reporting, supporting business continuity and disaster recovery efforts.
- Monitored data collection progress, identified and resolved issues to improve data accuracy and completeness.
- Extracted reports from SQL Server by executing SQL queries, facilitating data-driven decision-making.

EDUCATION:

- MS Computer science, University of Massachusetts Boston, USA Jan 2015 - Jan 2019
- Bachelor of Electronics and Communication Engineering, Anna University, India Sep 2007 - Nov 2011

CERTIFICATIONS:

- Mathematics for Machine Learning and Data Science by DeepLearning.AI on Coursera. July 2024