Senthil Palanivelu

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Portfolio , LinkedIn, GitHub
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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, LangChain, 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:

- Google Prompting Essentials by Google on Coursera.   Feb 2025
- Mathematics for Machine Learning and Data Science by DeepLearning.AI on Coursera.   July 2024