Senthil Palanivelu

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Education

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

Work Experience

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

- Led data harmonization project to standardize physiological signal datasets, delivered 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.

Nationwide Children's Hospital, Research Associate — 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.

Boston University, Research Data Analyst I — Apr 2020- Aug 2021

- Developed computing tools in Python 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.

Massachusetts General Hospital, Clinical Research Coordinator II — 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.

University of Massachusetts Boston, Research Assistant — 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.

Mphasis India, IT Specialist — Oct 2012- Feb 2014

- Supported and managed the data backup and restore operations for more than 100 clients globally.
- Performed client data collection, restoration, reporting and disaster recovery efforts.
- Monitored data collection progress, identified and resolved issues to improve data accuracy.
- Extracted reports from SQL Server by executing SQL queries, facilitating data-driven decision-making.

Projects

- Neuro Nutrition app | OpenAI, Python, Streamlit, HTML, CSS, Git
- Brain MRI segmentation | OpenCV, CNN, Python, CUDA, Git

Skills

- Scikit-Learn, PyTorch, NumPy, Pandas, Matplotlib, Seaborn
- GitHub Copilot, OpenAI, AI agents, LLM, Prompt Engineering, LangChain, RAG, ChromaDB
- Python, R, AWS, GitHub, bash, SQL, MATLAB, R Shiny, Excel, Jupyter Notebook, Docker, VS code, CSS, HTML
- Linear models, Classification, Regression, Clustering, Decision Tree, Random Forest, Optimization, Feature Engineering, CNN

Certifications

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