

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 a web application viewer for PSG signal data using R, 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.
- 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 multi-modal 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, RAG, Pinecone, Python, Streamlit, HTML, CSS, Git
- [Brain MRI segmentation](#) | OpenCV, CNN, Python, CUDA, Git
- [AI Virtual doctor](#) | OpenAI, Python, LLM

Skills

- Scikit-Learn, PyTorch, NumPy, Pandas, Matplotlib, Seaborn
- GitHub Copilot, OpenAI, AI agents, LLM, Prompt Engineering, LangChain, RAG, Pinecone
- 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