**HARSHINI GANGAPURAM** [Icon

Description automatically generated](http://www.linkedin.com/in/harshini-gangapuram) **[A picture containing logo

Description automatically generated](https://github.com/gharshini) [Icon

Description automatically generated](https://orcid.org/0000-0002-3113-8016)**

**+1 (919)-904-6750 |** [**harshinigangapuram@gmail.com**](mailto:harshinigangapuram@gmail.com)

**SUMMARY**

* 3+ years of experience in machine learning/deep learning, data mining, data processing with demonstrated abilities developing models for Computer Vision, Natural Language Processing (NLP), and Time-series prediction
* Organized with research and presentations educating students, peers, and superiors on research analysis
* Published research findings through peer-reviewed articles and analyzed results tailoring to possible future applications, and presented in international conferences
* A Google Certified TensorFlow Developer with demonstrated abilities in coding TensorFlow for Computer Vision, Natural Language Processing (NLP), and Time-series prediction
* Simplified complex problems/solutions using visual representation for ease and practical understanding
* Created, annotated, and maintained detailed research records
* Lean Six-Sigma Green Belt certified in utilizing DMAIC principles for continuous improvement
* Experience as a teaching assistant to teach biological signal acquisition (ECG, EEG, EMG, fNIRS, eye-tracking) and signal processing in the Bioinstrumentation lab
* Assisting advisor in grant writing and publication preparation

**TECHNICAL SKILLS**

Programming Languages: Python, R, MATLAB

Databases: SQLite, AWS ElasticSearch

Libraries: Pandas, NumPy, Scikit-Learn, TensorFlow, Keras, SciPy, MNE, Django, PyTorch, OpenCV, CNTK, NLTK, XGBoost, EEGLAB, PyTorch, MXNet, GPU programming (CUDA, TensorFlow)

Visualization: Plotly, Seaborn, Matplotlib, Networkx, PowerBI, Tableau

DevOps: GitHub, Gitlab, Docker, MLFlow

Environment: PyCharm, Anaconda (Jupyter Notebook, Spyder), R Studio

Cloud: AWS (SageMaker), GCP

Expertise: Data (structured and unstructured) mining and visualization tools, machine learning algorithms, artificial intelligence, deep learning, data science, research, reports, forecasts, decision analytics, predictive modeling, data-driven personalization, time management, communication (written and verbal), mentoring

Machine learning platforms: Jupyter, Notebooks, PyCharm, RStudio, Spyder, Domino, SPSS

**RESEARCH AREAS**

Machine learning: Supervised (regression, classification) and unsupervised (clustering, dimensionality reduction) algorithms, reinforcement learning, linear algebra

Deep learning: neural networks, convolutional neural networks, recurrent neural networks, long short-term networks, computer vision, natural language processing, time series prediction , and sparse recognition

Data science: Predictive modeling, Bayesian statistical inference, exploring data analysis, data visualization

Pattern recognition: feature generation, feature extraction, clustering, regression, classification

Signal processing: Compressive sensing, noise removal and outlier detection, signal decomposition, adaptive signal processing, biomedical signal processing (EEG, ECoG, Eye tracking, ECG, fMRI, fNIRS, EMG, EDA, PET), medical imaging, image segmentation and analysis

Time series analysis: Modeling and forecasting, change detection and motif discovery, gene expression, gene regulatory networks

Statistics: Probability, distribution, hypothesis testing, regression, time series analysis, data mining

**CERTIFICATIONS**

* Google Certified TensorFlow Developer

<https://www.credential.net/481dfac9-766f-464d-8540-ea1aa3b212c9#gs.5wpd3y>

* TensorFlow and Keras for Neural Networks and Deep Learning
* Green Belt in Lean Six Sigma
* CITI training for (clinical) Human Subject Research (for EEG data collection)

**EDUCATION**

* **Ph.D. in Bioengineering** |GPA: 3.67|University of Puerto Rico | **May 2022**
* **MS in Biomedical Engineering** |GPA: 3.25 | Wayne State University | 2017
* **BE in Biomedical Engineering** |GPA: 3.8 |Jawaharlal Nehru Technological University| 2013

**PUBLICATIONS**

* Gravitational and Space Research Journal, "Novel Graph-Theoretic Approaches for Gene Regulatory Network Inferencing applied to Arabidopsis Thaliana Grown in Microgravity," **Status: Accepted**
* MDPI Computers," Network analysis of Local Gene Regulators in Arabidopsis thaliana under Spaceflight Stress," DOI: <https://doi.org/10.3390/computers10020018>
* MDPI Genes, "Network Analysis of Gene Transcriptions of Arabidopsis thaliana in Spaceflight Microgravity," DOI: <https://doi.org/10.3390/genes12030337>
* IEEE Sensors Journal, "Deep 1D-ConvResNet: A Sparse EEG feature Learning Architecture for Multiclass Motor Imagery Classification", **Status: Submitted**

**EXPERIENCE**

**DOCTORAL THESIS**

University of Puerto Rico, Mayaguez | 08/2018 – Present

* Achieved 94% accuracy with CNN model to classify EEG spectrograms
* Achieved 96% accuracy with a deep 1D-ConvResNet model to classify sparse signals
* Working on EEG data collected with VR headset while the subject is playing game
* Maintained accurate records of research findings and provided statistical analysis of data results
* Contributed to and actively participated in research conception, design, and execution to address defined problems
* Conducted research guided by the faculty supervisor following institutional and federal guidelines
* Wrote and published peer-reviewed articles concerning findings and highlighted possible applications for findings
* Leveraged interpersonal and communication (both spoken and written) skills by mentoring Ph.D., graduate, and undergraduate students

**NASA EPSCOR RESEARCH ASSISTANT**

Funded by NASA EPSCOR | 06/2019 – 05/2020

* Developed Python Bioinformatics tool to infer causal relationships between gene regulatory networks using machine learning and deep learning (tabular/meta data)
* Achieved 97.3% accuracy to classify biological data using graph CNN model
* Performed weighted graph-theoretic analysis on gene regulatory networks and reported changes of Arabidopsis thaliana in spaceflight microgravity and ground control
* Gathered, arranged, and corrected research data to create representative graphs and charts highlighting results for presentations
* Validated incoming data to check information accuracy and integrity while independently locating and correcting concerns
* Worked with principal investigators to coordinate qualitative research into Bioinformatics and managed deliverables

**GRADUATE TEACHING ASSISTANT – BIOINSTRUMENTATION LABORATORY**

* University of Puerto Rico, Mayaguez | 08/2019 – 12/2019; 08/2021 – 12/2021
* Empowered engineering students to recognize and understand the basic anatomy and Physiology of cardiovascular, respiratory, and nervous system
* Administered a practical perspective of techniques used to measure physiological events
* Organized training materials for student-teams to program LabVIEW and helped them to design Biopotential Amplifiers using DAQ in LabVIEW
* Demonstrated to students how to acquire physiological signals (ECG, EEG)
* Motivated students to perform frog surgery to acquire nerve stimulation and EMG. 60% of students were comfortable in gaining hands-on experience on frog surgery
* Assessed lab reports projects to apply engineering concepts to solve medical problems to students

**GRADUATE TEACHING ASSISTANT – DIGITAL ELECTRONICS LABORATORY**

* University of Puerto Rico, Mayaguez | 08/2018 – 12/2018
* Motivated undergraduate students to gain hands-on experience and evaluated their work submissions
* Aided students to design a functional prototype of the project and encouraged report submissions according to IEEE norms
* 100% of the students who repeated the lab because of their low grades have improved the grades

**GRADUATE RESEARCH ASSISTANT**

* Wayne State University | 05/2015 – 01/2016
* Developed a Graphical User Interface (GUI) in the M R Research Laboratory using MATLAB towards tracking of Fetal Eye movement with ultrasound video clips in-order-to quantify various parameters to determine brain maturation and achieved an accuracy of 96.8%
* Addressed weekly meetings on the algorithm development and its progress updates
* Orchestrated undergraduate research assistants for interpreting the data using the GUI
* Completed a CITI training program with 100% grades on human subject research (regulatory and privacy frameworks applied to medical data) associated with Wayne State University to recruit patients for the R&D of M R Research Laboratory
* Motivated (pregnant) human subjects with certain health conditions to get recruited to R&D to examine the fetus using MRI scans. The acceptance of human subjects increased by 56% for the research

**CLINICAL ENGINEER INTERN**

* Detroit Medical Center | 05/2015 – 08/2015
* Developed innovative, elegant, and valuable solutions to solve critical engineering problems by working across patients, surgeons, and other hospital staff
* Introduced lean six sigma methodologies and applied DMAIC principles to train the hospital staff and reduced the waiting time of patients by 15%
* Independent Study: Designed Magnetic Organ Retractor for a procedure proposed by Dr. Donald Nuss to treat Pectus Excavatum and presented it as independent research

**CLINICAL ENGINEER INTERN**

* Krishna Institute of Medical Sciences, India | 09/2013 – 05/2014
* Reviewed and revised risk documents to assess the equipment failures
* Implemented root cause analysis of malfunctioned or failed medical device and achieved as a deduction in equipment failure by 20%
* Documented test protocols for equipment failure and testing and troubleshooting of new equipment devices
* Facilitated the hospital's Institutional Review Board Meetings for the Human Investigation Committee
* Presented complex analytics to stakeholders and customers

**BIOMEDICAL ENGINEER INTERN**

* Quality Care India Limited, India | 05/2012 – 09/2012
* Collaborated Senior Clinical Engineers in evaluating medical equipment and comparative analysis of medical equipment
* Arranged projects such as equipment acquisition purchase planning, analysis of vendor proposals, installation planning, equipment upgrades, equipment disposal; and saved a budget of 5%
* Designed data collection and analysis system to monitor decibel levels within the hospital units

**CONFERENCES**

* "A Comparative Network-Based Analysis of Arabidopsis Thaliana Transcriptome Responses in Spaceflight Ecosystems in Low Gravity," Harshini Gangapuram, CMBE International Conference 2020 organized by Biomedical Engineers Society <https://www.bmes.org/cmbeconf20abstracts>