RESUME

A RAMANATHAN

M.TECH (BIOMEDICAL ENGINEERING)

B.E (BIOMEDICAL ENGINEERING)

EMAIL: ramsaivigbala@yahoo.co.in

GOOGLE SCHOLAR: https://scholar.google.com/citations?user=nruf8h0AAAAJ&hl=en

PROFESSIONAL SUMMARY:

Biomedical Engineer and Medical AI Data Scientist with 4+ years of experience in medical imaging and clinical AI systems. Specialized in machine learning, deep learning, computer vision, classical image processing, quantitative morphometric analysis, and structured data analysis for radiology and computational pathology.

Proven track record leading multi-institutional research projects, supervising research interns, publishing first-author papers in IEEE/Springer venues, and deploying AI models on real-world clinical datasets.

EDUCATION:

Master of Technology (M. Tech) in Biomedical Engineering
M.S. Ramaiah University of Applied Sciences, India
2017 – 2019
CGPA: 7.81 / 10

Bachelor of Engineering (B.E.) in Biomedical Engineering
Jerusalem College of Engineering, Anna University, India
2013 – 2017
CGPA: 6.47 / 10

SOFTWARE PROFICIENCY:

General Tools: MS Office (Word, PowerPoint, Excel)

Programming Languages: Python, MATLAB

Libraries & Frameworks: OpenCV, TensorFlow, Keras, PyTorch

Machine Learning & Deep Learning: SVM, Random Forest, XGBoost, CNN, Multiple Instance Learning etc

Segmentation Architectures: U-Net and Image Processing based segmentation methods

Pathology & Image Analysis Tools: ImageJ, CellProfiler, OMERO, HoverNet, StarDist

EXPERIENCE:

- **March 2019- October 2019- Project Experience**

Worked on my Master's dissertation on medical image processing and machine learning for Autism disorder.

- **April 2020- Present- Independent Researcher**

Working on various projects in medical image analysis and machine learning, enhancing personal skills and knowledge.

Expanded technical skills in Python, advanced neural architectures, and medical imaging analysis

- **October 2021- June 2023- Project Lead & Junior Research Fellow & Project Coordinator – SRM Institute of Science and Technology, India.**

Led the classification of orthopedic implants from X-Ray images using Deep learning techniques.

Supervised and mentored 18 research interns in biomedical AI and medical image analysis projects, guiding problem formulation, experimentation, and manuscript preparation.

Designed and deployed CNN architectures (ResNet, EfficientNet, DenseNet etc) achieving 95%+ accuracy on real-world clinical datasets.

Managed large-scale medical imaging database of 10,000+ X-ray images with clinical annotations across implant types.

Collaborated with orthopaedic surgeons and radiologists to define clinical requirements and ensure clinical relevance of AI models.

Coordinated and Submitted grant applications for National and International funding agencies.

- **September 2023- September 2025- Data Scientist- Impart Dx- Startup (USA - Remote work from India)**

Analyzed histopathology whole-slide images (WSIs) and patch-level images for tumor identification and quantification across Non-Hodgkin Lymphomas (CLL, FL, MCL) and Leukemias (ALL, AML).

Implemented advanced deep learning architectures including U-Net, HoVer-Net, and Multiple Instance Learning (MIL) pipelines to improve diagnostic accuracy and computational efficiency in digital pathology workflows.

Developed SimCLR-based self-supervised contrastive learning pipelines for patch-level representation learning on histopathology images, with t-SNE–based feature visualization for unsupervised clustering of cancer tissue patches.

Developed automated tile and patch extraction pipelines from Whole Slide Images at multiple zoom levels, enabling scalable preprocessing for downstream deep learning and classical analysis workflows.

Applied Macenko stain normalization to standardize H&E stained histopathology images across datasets, improving cross-dataset model generalizability and consistency.

Developed classical image processing and segmentation pipelines using watershed, Otsu thresholding, and color-based methods — particularly effective in low-annotation and zero-annotation settings.

Performed cell-level quantitative morphometric feature extraction from segmented nuclei and cytoplasm, including size, shape, and morphological descriptors, and integrated these features into machine learning–based classification pipelines for disease characterization.

Utilized state-of-the-art computational pathology tools including StarDist, CellProfiler, ImageJ, PyTorch, OpenCV, scikit-image, and scikit-learn for cell segmentation, quantification, morphological analysis, and model development.

- **Jan 2025 to December 2025- AI Consultant- Her Health AI- Startup (USA - Remote work from India)**

Provided AI consultancy to a healthcare AI startup for developing women health disease -focused diagnostic and decision-support solutions.

Analyzed and processed structured patient-reported data (clinical questionnaires and symptom-related responses).

Developed synthetic patient-level tabular data by defining domain-informed features and target variables relevant to disease, enabling prototyping and evaluation of machine learning classification workflows.

Designed and implemented machine learning-based classification models to categorize patient responses and clinical patterns. Collaborated with engineering and business teams to align technical solutions with clinical and product requirements.

- **April 2026 to Present- AI Consultant- Multiple Health Startups (Worldwide- Remote work from India)**

MednTech (NGO), Tunisia- Designed and developed a fine-tuned DenseNet121 model to classify cervical image analysis using acetic acid (VIA). Achieved 94% validation accuracy and 91% test accuracy.

Unicorn Medics (UK)- Guide and manage the research team and engineers working on orthopaedic fracture detection and preoperative template creation. Assist in technical recruitment, model development, and the smooth operation of the technical team.

AREA OF INTEREST:

- Image Processing and Analysis
- Machine Learning and Deep Learning
- Signal Processing and Deep Learning
- Medical Nanotechnology
- Medical devices/ Instrumentation

SEMINARS/CONFERENCES/SYMPOSIUM ATTENDED:

- Doctors AI Conference, Bengaluru, India- 2025.
- International Conference on Bio signals, Images, and Instrumentation-2024
- Tamil Nadu Orthopedic Association Annual Conference (TNOACON) - 2023
- International Conference on Modeling Machine Learning and Astronomy – 2019
- Deep Brain Stimulation Seminar - 2018
- National Conference on Scientific Research in Biomedical Engineering – 2017

PROFESSIONAL ACTIVITIES:

- Reviewer for International Conference on Image Analysis and Processing (ICIAP), Springer, 2023
- Permanent Reviewer for Inteligencia Artificial, Scopus Indexed Journal

PUBLICATIONS AUTHORED/CO-AUTHORED (Selected list from 12+ papers):

- Classification of Corpus Callosum Layer in Mid-sagittal MRI Images Using Machine Learning Techniques for Autism Disorder-MMLA, 2019- **First Author Paper.** https://link.springer.com/chapter/10.1007/978-981-33-6463-9_7
- Classification of Human Tissues from Histopathology Images Using Deep Learning Techniques- ICBSII, 2024- **First Author Paper.** https://ieeexplore.ieee.org/document/10564062
- Deep Learning Based Fine-Tuned Unet for Polyp Segmentation– CONECCT 2024- **First Author Paper** https://ieeexplore.ieee.org/document/10677285
- Harnessing the Potential of Deep Learning for Total Shoulder Implant Classification: A Comparative Study- MIUA, 2023 https://link.springer.com/chapter/10.1007/978-3-031-48593-0_9

- Automated Knee Implant Identification from 2D Templates using Image Processing and Artificial Intelligence- An Experimental Approach- ICAIA, International Conference, 2023,Springer-Conference- https://link.springer.com/chapter/10.1007/978-3-031-84397-6_14

DECLARATION : I hereby declare that all the above details are true to the best of my knowledge.

PLACE: CHENNAI **DATE:** 24-June-2026