Rajkumar Arumugam Jeeva

Ottawa, ON K1N 8J6| +16138672638
rajkumaraj2303@gmail.com | https://www.linkedin.com/in/rajkumar-a-j-621252187
GitHub: https://github.com/Rajkumar-ArumugamJeeva?tab=repositories

With 2 years of experience in image processing and computer vision, I am skilled in edge computing, deep learning model development and optimization, LLM, product development, and healthcare automation. I have contributed to an IEEE journal on optical flow kymogram generation and am currently pursuing an MASc in Biomedical Engineering (Computer Vision). Actively seeking full-time opportunities in related fields, I am proficient in Python, OpenCV, PyTorch, TensorFlow, MATLAB and LabVIEW.

Work Experience

RESEARCH ASSISTANT (PART TIME) Mar 2024 - Present
CHILDREN'S HOSPITAL OF EASTERN ONTARIO | Ottawa

- Developed computer vision algorithms (Pose Estimation and statistical calculations) to automate gait video quality analysis and evaluation and achieving high accuracy in Edinburgh Visual Gait Score (EVGS) calculations.
- Conducted extensive literature review to incorporate the latest advancements in computer vision and machine learning, integrating techniques that enhanced model performance and aligned with clinical needs.

PROJECT ASSOCIATE Aug 2021 - Apr 2023
HTIC - INDIAN INSTITUTE OF TECHNOLOGY MADRAS RESEARCH PARK | Chennai, India

- Designed and implemented custom computer vision algorithms for automated medical systems, achieving 95% real-time accuracy using Python and LabVIEW, and reduced device response time by 30% through firmware optimization.
- Deployed firmware with Arduino/ MicroPython for distributed system modules, enabling intelligent automation across 10+ hardware components.
- Created tailored machine vision software for multi-brand camera testing, enhancing quality check process speed by 25%.
- Managed data processing and version control using Git, ensuring streamlined development and model retraining for optimized deployment.

PRODUCT DESIGN INTERN Jul 2021 - Aug 2021
MACHENN INNOVATIONS | Coimbatore

- Product Design and Digital Twinning using AutoCAD Fusion 360, Blender

Education

University of Ottawa Sep 2023 - Present
MASTER of APPLIED SCIENCE | Biomedical Engineering, Computer Vision

Sri Sivasubramaniya Nadar College of Engineering Aug 2017 - May 2021
BACHELOR of ENGINEERING | Biomedical Engineering

Publications

Parametrization of Optical Flow Kymograms Jan 2023
IEEE
Developed advanced image processing techniques for analyzing laryngeal high-speed video endoscopy (LHSV) to diagnose voice disorders. Created optical flow kymograms and glottal optical flow waveforms, enabling visual assessments and quantitative analysis of vocal fold dynamics and physical parameters.

Programming Languages: Python, Micropython, C++, Arduino, MatLAB, LabVIEW

Machine Learning and Computer Vision skills: Model Development and optimization, Large dataset handling, Model Inference and Deployment, Retraining models.

Machine Learning Frameworks: TensorFlow, PyTorch, LangChain, ChromaDB, Llama

Data Management and Version Control: Proficiency in Git/GitHub for managing ML and data processing code.

Additional skills: Problem solving skills, Edge Computing,StreamLit

Projects

Automated Video Quality Assessment for Gait Analysis (Thesis)

Sep 2023 – Present

- Developing video assessment system to optimize EVGS using pose estimation, focusing on plane detection, zoom events, and patient height percentage.

AI-Powered Automatic Cold Mail Generator Using Llama 3.1

Nov 2024

- Developed an AI-driven tool using Llama 3.1, LangChain, ChromaDB, and Streamlit for personalized cold emails.
- Scrapes job descriptions, matches them to a local portfolio database via semantic search, and generates direct, tailored email content.

Classification of Brain Anomalies Using MRI

Jan 2024 - Apr 2024

- Built MRI classification system using MobileNet CNN (98.6% accuracy) for real-time clinical use via Heroku.

Classification of Heart Diseases Using Cardiac MRI

Jan 2024 - Apr 2024

- Cloud-based CMR classification system using MobileNet CNN (92.5% accuracy) for detecting cardiomyopathies in real time.

Detection of Leukemia Cancer Cells in Blood Samples

Jul 2020 - Nov 2020

- Developed MATLAB-based system to detect leukemia cells in microscopic images, improving diagnostic accuracy.

Volunteer

President - Association of Biomedical Engineering, SSNCE | Jun 2020 - May 2021

Co-Chair - IEEE-EMBS SSN Student Chapter | Jun 2020 - May 2021

Organizer - SSN International Biomedical Engineering Conference | Mar 2020

Languages

English (Fluent), Tamil (Fluent)

Certificates

- **AI for Medical Diagnosis** | Coursera
- **Biomedical Imaging Systems** | NPTEL
- **LabVIEW for Image Processing** | Udemy
- **Product Design in Healthcare** | Machenn
- **Deep Learning and Computer Vision** | Udemy
- **MATLAB Fundamentals** | MathWorks