



Sriharsha Aryasomayajula

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About me:

Experienced Machine Learning Engineer with a background in developing and training various classification and segmentation models for quality inspection of fresh produce. Skilled in AWS, MLOps pipeline implementation, and deploying neural networks on edge devices. Experience in robotics engineering, mechanical design. Published author and accomplished presenter.

WORK EXPERIENCE

07/11/2021 – CURRENT Sedgefield, United Kingdom

MACHINE LEARNING ENGINEER WOOTZANO LTD

Trained various classification models for quality inspection of fresh produce. Trained instance segmentation and semantic segmentation models using AWS sagemaker studio and EC2 instances. Implemented MLOps pipeline for versioning models, data and tracking experiments. Calibrated LIDAR and stereoscope cameras on robots. Implemented machine learning inference into ROS environment using openVINO

- Trained quality inspection model with an accuracy of 91%
- Trained multiple models for estimation of the weight of fresh produce
- Decreased inference time for instance segmentation models
- Developed packages for ros2 inferences

31/05/2021 – 31/10/2021 London, United Kingdom

RESEARCH ASSISTANT IN UNIVERSITY KINGSTON UNIVERSITY

As a research assistant of the project, my responsibility is to develop and enhance the accuracy and reliability of an artificial intelligence algorithm to detect hand fractures in children's x-rays. The model's proof of concept will be validated by radiologists and the outcome will be used to plan a larger clinical study.

- Worked on DICOM format files
- Experience with AWS gained
- Worked on various models (VGG16, VGG19, ResNet50, Inception v3)

29/02/2020 – 30/05/2020 London, United Kingdom

RESEARCH ENGINEER THE SCIENTISTS LABORATORY

Developed a deep learning neural network for image classification using transfer learning principles. Trained this model using a dataset that consisted of 8000 images. Deployed this model onto an edge device.

- Successfully deploy neural networks on edge device (Raspberry Pi)

22/02/2017 – 30/10/2018 Hyderabad, India

ROBOTICS ENGINEER ASIMOV LABS

Carried out detailed mechanical design work including 3D modeling, calculations, simulation, and design verification testing. Creating technical specifications including functional design specifications, 2D drawings, assembly drawings, and bills of materials. Supported the transition of designs into manufacture. I

presented the product pitch to potential customers and investors about the product to gain insights into the market and feedback on the product.

- Recruited, trained, and managed a team of paid and volunteer interns, who performed a range of business roles;
- Successfully found initial funding and set up a legal entity;
- Shortlisted as emerging technology start-up of the year for national level (India) Crowdfunding campaign;
- Shortlisted for the AAVISHKAR-2019 event as one of the 8 start-up finalists from 80 for seed funding.

● EDUCATION AND TRAINING

03/03/2020 – 30/03/2021 London, United Kingdom

MSC IN MECHATRONICS SYSTEMS Kingston University

Address Friars Ave, London, United Kingdom | **Website** <https://www.kingston.ac.uk/> | **Final grade** Distinction

30/06/2013 – 30/07/2017 Hyderabad, India

BTECH IN MECHANICAL ENGINEERING <https://www.ifheindia.org/about-university.html>

Address Donthanapally, Shankarapalli Road, , Telangana, India, Hyderabad, India |

Website <https://www.ifheindia.org/icfaitech/index.html>

● DIGITAL SKILLS

Programming Languages: C, C++, Python, Matlab | AI platform: Pytorch, Tensorflow etc. | Good listener and communicator | Robotic Operative System (ROS) | good knowledge of SolidWorks | Python for Data Science: tensorflow, caffe, keras, openCV, numpy, pandas

● LANGUAGE SKILLS

Mother tongue(s): **TELUGU**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C1	C1	C1
GERMAN	A1	A1	A1	A1	A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● ADDITIONAL INFORMATION

PROJECTS

30/04/2020 – 27/02/2021

ROAD SIGN DETECTION FOR SELF DRIVING CARS

- Optimized deep learning algorithms for object detection using transfer learning (Tensorflow).
- Pre-processed images from videos into frames and augmented them to create a larger dataset.
- Critical analyzed the ergonomics of the driver assistance system.

Link <https://www.youtube.com/watch?v=uX1Xpr4ej3w&t=1s>

31/08/2020 – 09/09/2020

FRACTURE DETECTION IN X-RAYS OF WRISTS

- Pre-processed data and augmented images to increase the dataset
- Utilized PyTorch framework to train and test object detection model.

Link https://github.com/harshaneo17/pytorch_object_detection

31/03/2018 – 30/05/2018

4-WHEELED ROBOT USING ROS

- Designed chassis and power train for a 4 wheeled mobile robot. Utilized ROS packages to facilitate teleop control using second PC.
- Mounted Raspberry pi and teensy 3.1 with motor drivers and IMU sensor in the robot.
- Utilized ROS tools like GAZEBO, and rviz to simulate and visualize the robot

Link <https://www.youtube.com/watch?v=8v7J19uU1TA>

INVERTED PENDULUM USING ARDUINO AND QUANSER CUBE

- Utilized quanser cube and Arduino to simulate inverted pendulum in both Matlab and the real world.
- Interfaced quanser cube with Arduino using SPI communication protocols.
- Inverted the pendulum against gravity using a Double PD controller.
- LQR controller used to get Q values which were used in Double PD controller

DEPLOYING CLASSIFICATION MODEL INTO A LOCAL WEBPAGE USING FLASK

- Created a flask application to deploy classification model to classify and predict images into local web page

CREATIVE WORKS

Github profile

Link <https://github.com/harshaneo17>

Kaggle Profile

Link <https://www.kaggle.com/harshaarya>

Solidworks Portfolio

Link <https://grabcad.com/harsha.arya-2>

PUBLICATIONS

Developing an artificial intelligence diagnostic tool for paediatric distal radius fractures, a proof of concept study

– 2023

In the UK 1 in 50 children will sustain a fractured bone yearly yet studies have shown that 34% of children sustaining an injury do not have a visible fracture on initial radiographs. Wrist fractures are particularly difficult to identify as the growth plate poses diagnostic challenges when interpreting radiographs. Materials and methods: We developed convolutional neural network (CNN) image recognition software to detect fractures in radiographs of children. A consecutive dataset of 5000 radiographs of the distal radius in children aged less than 19 years from 2014-2019 were used to train the CNN. Additionally transfer learning from a VGG16 CNN pre-trained on non-radiological images was applied to improve generalization of the network and classification of radiographs. Hyperparameter tuning techniques were used to compare the model to the radiology reports that accompanied the original images to determine diagnostic test accuracy. Results: The training set consisted of 2881 radiographs with a fracture and 1571 without a fracture, 548 radiographs were outliers. With additional augmentation the final dataset consisted of 15,498 images. The dataset was randomly split into three subsets, a training dataset (70%), a validation dataset (10%), and a test dataset (20%). After training for 20 epochs, the diagnostic test accuracy was 85%. Discussion: A CNN model is feasible in diagnosing paediatric wrist fractures. We demonstrated that this application could be utilized as a tool for improving diagnostic accuracy. Future work would involve developing automated treatment pathways for diagnosis, reducing unnecessary hospital visits and allowing staff redeployment to other areas

CONFERENCES AND SEMINARS

20/09/2022 – 20/09/2022 – The ICC, Birmingham

BRITISH ORTHOPEDIC ASSOCIATION ANNUAL CONGRESS Presentation of findings from Research on Applications of AI for distal radial fractures

Link <https://www.youtube.com/watch?v=vIPP3eQ3AMA>

30/03/2023 – 30/03/2023 – Online Event

SWL AI MEETING Presentation of findings from Research on Applications of AI for distal radial fractures