CHARUKA NISHALA BANDARA

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Personal Statement

A hardworking, passionate Electronic and Telecommunication Engineering graduand with a strong foundation in Mathematics and Computer Vision. Eager to embrace new challenges and deliver excellence to its finest.

Experience

- **AI Research Engineer - Robotics Assistance Devices**| *Python, Tensorflow, CV, ML*   Mar 2025 - Present
  Conducting applied research and development of AI-driven solutions for RAD's security robots and surveillance products. Currently building custom multi-object trackers using computer vision techniques for real-time surveillance.
- **AI Engineering Intern - BPH 200 Ventures Pte. Ltd**| *Python, Tensorflow, CV, NLP, ML*   Nov 2023 - Feb 2025
  Worked as an AI Engineering intern during my internship for 6 months. Continued working part-time once the internship period was over. Conducted research on machine learning and computer vision techniques for automated classification of tea leaves to support quality control and grading processes in the Sri Lankan tea industry.
- **SGI Fellow - Massachusetts Institute of Technology**| *Python, Geometry Processing*   July - Sept 2024
  Worked on research projects related to geometry processing for the Summer Geometry Initiative 2024.

Education

- **University of Moratuwa, Sri Lanka - B.Sc. Engineering Honours *(First Class)***
  Majoring in Electronic and Telecommunication Engineering (CGPA:3.70/4.00)   Aug 2021 - 2025
  Minoring in Mathematics (CGPA:4.00/4.00)   May 2022 - 2025
- **Eheliyagoda National School**
  GCE Advanced Level - Physical Science Stream - ***4As (All Island:19)***   Dec 2019
- **Other Courses**
  Courses followed to self-learn the content required for the projects outside the full-time degree.   Online
  - **Machine Learning Specialization (DeepLearning.AI and Stanford University):** On Coursera
  - **Deep Learning Specialization (DeepLearning.AI):** On Coursera
  - **Introduction to Computer Vision and Image Processing (IBM):** On Coursera
  - **Introduction to Data Science Specialization:** On Coursera

Awards - International

Competition 🔗	Achievement	Country	Year
IEEE Video and Image Processing Cup	Globally 11th	Online	2023
International Mathematics Olympiad	Honourable Mention	Cluj-Napoca - Romania	2018
International Mathematics Olympiad	Honourable Mention	Rio de Janeiro - Brazil	2017
Asia Pacific Mathematics Olympiad	Honourable Mention	Mexico	2017
International Mathematics Competition	Silver Medal - Individual	Chiang Mai - Thailand	2016
International Mathematics Competition	First runner up - Team	Chiang Mai - Thailand	2016
International Mathematics Competition	First runner up - Group	Chiang Mai - Thailand	2016
International Mathematics Competition	Merit - Individual	Changchun - China	2015
International Mathematics Competition	Second runner up - Team	Changchun - China	2015
International Mathematics Competition	Second runner up - Group	Changchun - China	2015
International Mathematics Olympiad	Honourable Mention	Chiang Mai - Thailand	2015
International Mathematics Competition	Gold Medal - Individual	Burgas - Bulgaria	2013
International Mathematics Competition	Champion - Group	Burgas - Bulgaria	2013
International Mathematics Competition	Second runner up - Team	Burgas - Bulgaria	2013
International Mathematics and Science Olympiad	Silver Medal	Lucknow - India	2012
International Mathematics and Science Olympiad	Bronze Medal	Naga City - Philippines	2011

Machine Learning Projects

- **Humanoid Head for a Robot Receptionist - Final Year Project** 🔗

  Built a humanoid head for a robot receptionist capable of biomimicking human expressions, having natural conversation, recognizing, and re-identifying people. I mainly worked on the **face re-identification** task.

- **IEEE IES Generative AI Hackathon** 🔗

  Developed a web application to interpret FBC reports for patients by leveraging vision models for data extraction and LLMs with Retrieval-Augmented Generation (RAG) for robust analysis and interpretation of RBC metrics. Ranked among the top 11 teams globally.

- **Densely Packed Product Detection Model** 🔗

  Developed a model to detect objects in densely packed scenes as an academic project for the module Image Processing and Machine Vision. Our approach was to use a UNet++ architecture with RetinaNet101 backbone, which gave 94.7% accuracy.

- **Facial Key Points Detection** 🎧

  Built a deep learning model based on Residual Convolutional Neural Network and Residual blocks using Keras with Tensorflow 2.0 as a backend to detect 15 facial key points, which achieved an accuracy of 86%.

- **Pneumonia Prediction** 🎧

  Pneumonia is an infection that affects one or both lungs. Fine-tuned an EfficientNet deep learning model on 5200 Chest X-ray images to predict the presence of Pneumonia, which achieved 87% accuracy.

- **Diabetic Retinopathy Prediction** 🎧

  Developed a Deep Learning model to detect blindness from Retina images before it occurs using ResNet which achieved 83.1% accuracy.

- **Fake handwritten digit images detection** 🎧

  Implemented a Deep Convolutional Generative Adversarial Network(DCGAN) using PyTorch to detect fake handwritten digits with a generator and a discriminator.

- **Cervical Cancer Risk Prediction** 🎧

  Developed and trained an XGBoost model aimed at predicting cervical cancer incidence among a cohort of 858 patients considering their demographic information, habits, and historical medical records, which achieved 95.3% accuracy.

- **Pets Detection** 🎧

  Developed and trained a YOLOv5 model with a customized similarity metric to detect and recognize pets.

Skills

- **Programming Languages:** Python, C++(Novice)
- **Frameworks:** PyTorch, Tensorflow, Keras
- **Software/Tools:** Github, VS Code, Kaggle, MATLAB, SOLIDWORKS
- **ML/CV:** OpenCV, Numpy, Pandas, matplotlib

Leadership/ Volunteer Experience at University of Moratuwa

- **Mathematics Society :** *Assistant Secretary,Vice President* *Jun 2021 - Oct 2023*
- **Electronic Club :** *Content writer, Committee member, Manager Operations* *2022 - 2024*
- **Student Representative - Department of ENTC** *May 2022 - Feb 2023*
- **AIESEC in Colombo South** *Aug 2021 - Jun 2022*

References

Dr. Ranga Rodrigo
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