Mayukh deb

Curriculum Vitae

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DOB: November 9th, 2000

Education

Expected 2023	**Bachelor's of Technology**, *Electrical and Computer Engineering*, ASE, Amrita Vishwa Vidyapeetham, Kollam, India. GPA: 8.93/10.0.
2016 - 2018	**Higher Secondary**, Amrita Vidyalayam, Kolkata , India. Marks: 93%.
2016	**Secondary**, Amrita Vidyalayam, Kolkata, India. GPA 8.8/10.0.

Areas of Interest

Deep neural networks, Data science, GANs, Adversarial Attacks Computer vision, Image processing

Experience

May 2020 - August 2020	**Google Summer of Code with INCF**, Worked with OpenWorm and trained multiple deep learning models for:

- Segmenting microscopic images of embryos to extract individual cells and other features
- Generate images of embryos with a GAN
- Estimating the population of various lineages of cells within the embryo from videos
- Predicting the curvature/muscle activity of a worm's body with time using LSTMs
- Determining the lineage of a cell within the C. elegans embryo from it's position, size and time
- Also built computer vision pipelines to track multiple worms from video feeds and decompose the worm's body into simpler skeletons for analysis

August 2020 -	**Creator of Devolearn** Devolearn is a python library which can be used to accelerate data driven research on embryos with Pre-Trained deep learning models used for feature extraction directly from microscopic videos and images.
July 2019 - Present	An active member in **amFOSS**, Amrita Vishwa Vidyapeetham, Amritapuri. amFOSS is India's leading computer science club with over 50 passionate students who actively contribute to open source software.

Relevant Projects

December 2019 - January 2020	**Mind the bend** Made a car drive and stay on the road by itself in a simulation using a custom ensemble model and some automation using PyAutoGUI. The model was trained on custom data which comprised of images from two perspectives of the road for better performance https://github.com/Mayukhdeb/mind_the_bend
February 2020	**Deep chicken terminator** This was a computer vision project where I tracked various animals in real time in the from the live feed of the player's perspective in the game minecaft. At the heart of this project was a deep learning model trained to classify animals in minecraft. https://github.com/Mayukhdeb/deep-chicken-terminator

March 2020 - April 2020	**Deep chicken saviour** Used adversarial attacks on the trained model from deep-chicken-terminator to break the tracking algorithm using FGSM. Generated "Adversarial blocks" within the game which were misclassified as animals by the model. https://github.com/Mayukhdeb/deep-chicken-saviour
January 2020 - March 2020	**Adventures with augmentation** Worked on a custom dataset generated from a time-lapse video of the life cycle of a c.elegans worm. Trained a deep learning model which detects and classifies the embryo of the worm into 4 of its embryonic stages with an accuracy of over 98% https://github.com/Mayukhdeb/adventures-with-augmentation
April 2020	**Worm embryo classifier** Flask web-app where the user can drag and drop a microscopic image of a roundworm's (C.elegans) embryo to determine it's embryonic stage using deep learning. https://github.com/Mayukhdeb/worm-embryo-classifier
January 2020	**ECG heartbeat categorization** Worked on an ECG dataset and trained a deep learning model which helps derive medical inferences from ECG data of patients with an accuracy of over 97% https://github.com/Mayukhdeb/ECG-heartbeat-categorization

Technical Skills

Programming	Python, C
Primary Libraries	PyTorch, NumPy, SciPy, Pandas, OpenCV, PIL
OS	GNU/Linux, Microsoft Windows
Tools	Jupyter Notebooks, Git, conda
Web Development	FrontEnd- HTML, CSS BackEnd- Flask

Volunteer work and extra-curricular activities

2010 - 2018	**Black belt in kyokushin karate:** I've been a part of the martial arts class in my school and participated in multiple tournaments in Kolkata, India under the mentorship of Sensei Bejoy Dhara, branch chief and country representative for IKO Matsushima.
2016 - 2018	**Co-ordinated charity events to support villages:** I was one of the co-ordinators who helped put together events where students donated basic medical supplies and other utilities which were to be given to the poor and needy children in villages near Kolkata, India. This programme was a part of Mata Amritanandamayi devi's (Popularly known as "Amma") efforts to help the poor and the needy throughout the world
2016 - 2018	**Helped co-ordinate clean up drives in areas near our school as a part of "Amala bharatam":** I was one of the co-ordinators who helped put together events where students donated basic medical supplies and other utilities which were to be given to the poor and needy children in villages near Kolkata, India. This programme was a part of Mata Amritanandamayi devi's (Popularly known as "Amma") efforts to help the poor and the needy throughout the world
2019	**Volunteered for the crowd management team during AmritaVarsham:** I was one of the volunteers who helped in crowd management during AmritaVarsham (Amma's birthday celebrations).

Languages

English	Fluent

Hindi, Bengali   Fluent