Amartya Achin Mandal

Atlanta, Georgia

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EDUCATION

Georgia Institute of Technology   **Atlanta, Georgia**
Master of Science (MS) in Bioinformatics (GPA: 4.0/4.0)   *Aug 2021 – Dec 2022*
Relevant Coursework: *Medical Image Processing, Machine Learning in Computational Biology, Computer Vision*

Indian Institute of Technology Guwahati (IITG)   **Guwahati, India**
Bachelor of Technology (B.Tech) in Biotechnology   *Jul 2013 – Jun 2017*

PROFESSIONAL EXPERINCE

McGrath Lab - Georgia Institute of Technology   **Aug 2021 – Present**
Graduate Research Assistant   *Atlanta, Georgia*
- Applying **Object Detection** and **Tracking** using Computer Vision and Deep Learning (YOLOv5 and SORT, DeepSORT) approaches to identify trajectories and understand social behaviour of Lake Malawi Cichlids
- Leading the Journal Club for the lab focused on Genetics, Neuroscience and Machine Learning.

Synapsica Healthcare   **June 2019 – July 2021**
AI Scientist | Tech Stack: Python, PyTorch, MongoDB   *Bangalore, India*
- Developed, trained and deployed **Deep Learning** models for **diagnostic imaging** (**MRI** and **X-ray**) and reporting across multiple product suite which are deployed in radiology centers across the world.
- Implemented customised **Convolution Neural Network** (CNN) based architectures, student-teacher knowledge distillation models for effective **image classification**, **regression** and **segmentation** tasks.
- Applied YOLOv3 **object detection** algorithm and GRAD-CAM for explainability of the Deep Learning models for vertebrae and disc detections, chest xray abnormalities
- Created a **Mask-No Mask classifier** to check if people are wearing masks during Coronavirus in live video feeds

Decimal Point Analytics   **April 2018 – June 2019**
Full Stack Developer - Machine Learning | Tech Stack: Python, Tensorflow, Selenium, MySQL   *Mumbai, India*
- Developed, designed, automated and maintained a **sentiment analysis** model (CNN+RNN) to recommend news articles affecting business operations across several domains, saving a minimum **60 person-hours/month**
- Designed and built a **Deep Learning CNN regression** model by leveraging household images and predicting income of the families.
- Implemented **machine learning** as well as ensemble models for **Credit Risk Default** prediction
- Contributed to various in-house projects involving management tools (CRM), monitoring using AWS Lambda and automation tools for data-mining of newspapers text using selenium

PROJECTS

Automatic tumor infiltrating lymphocytes scoring for breast cancer. | *Georgia Institute of Technology*   **Ongoing**
- Performing **multi-class segmentation** of whole slide images to identify the lymphocytes and providing a score to indicate prevalence of the tumor infiltrating lymphocytes using image processing and deep learning.

Effects of LPS on Macrophages - RNA Sequence Analysis | *Georgia Institute of Technology*   **Oct 2021**
- Transcriptomic Analysis to study the anti-inflammatory activity of Petiveria alliacea ethanol extract (PW) on macrophages in the presence and absence of Lipopolysaccharide (LPS) by creating a **RNA-seq pipeline** for analysis

Protein - Protein Network Analysis | *Functional Analysis Lab insilico, University of Tokyo*   **May 2016**
- Constructed a **protein-protein interaction network** from public databases (in XML) in Python and identified harmful nodes from this network using **Controllability Analysis** and Hopcroft Karp Algorithm for Maximal Matching.
- Implemented **Perl and R scripts** for alternative processing of **RNA-seq clinical data** and analyzing the results thus obtained for statistical significance.

TECHNICAL SKILLS

Languages: Python, R, Bash, C++, perl
Frameworks and Libraries: Pytorch, Tensorflow (Keras), OpenCV, Numpy, Pandas, Matplotlib, NLTK, Biopython, Flask
Technologies: Linux, git, Gitlab CI/CD, Apache Spark, AWS EC2, MySQL, MongoDB

HONORS AND AWARDS

- Computational Biology Graduate Research Assistantship Spring 2022, Georgia Tech

- JICA Innovative Asia Scholarship awarded for Research Internship in the University of Tokyo

- Best Poster presentation in Research Conclave IIT Guwahati for 'Controllability Analysis of Human Protein-Protein Interaction network using a Disease Dataset'