Taiabur Rahman

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OBJECTIVE

I am actively seeking a PhD position that focuses on medical imaging.

EDUCATIONS

MSc, ERASMUS+ Joint MSc in Medical Imaging & Applications (MAIA) *Sep 2022 -Aug 2024*
Institut national de la santé et de la recherche médicale (INSERM, NeuroGenetics of Mouse Models (NGMM), Institute of Molecular Chemistry of the University of Burgundy (ICMUB)
4th semester Master Thesis- Mouse Brain Segmentation using Deep Learning: *Feb 2024 -Jun 2024*
The goal of my project is to develop and implement a deep learning model capable of automatic segmenting mouse brain tissues into these 24 regions of interest in a 3D volume, with the NeuroGenetics of Mouse Models (NGMM) group collaboration with the Institute of Molecular Chemistry of the University of Burgundy (ICMUB), the research environment of the University of Bourgogne.
Supervisor: Pr Fabrice MERIAUDEAU, Alain Lalande, Stephan Collins

1st, 2nd and 3rd academic semester:
University of Burgundy-France, University of Cassino- Italy & University of Girona-Spain,
Field of Study: *Attended three different university as a mobility student and gain knowledge on Digital Signal Processing, Medical Sensors, Machine and Deep Learning, Advance Image Analysis and in my ongoing semester, learning Medical Image Segmentation and Registration, Computer Aided Diagnosis, Computer Aided Surgery and Medical Robotics, E-Health as well as hands-on practical session.*

Summer School on Biomedical Imaging EXCITE, ETH Zurich Sep 2023
Swiss Federal Institute of Technology Zurich (ETH Zurich) & University of Zurich, Switzerland
Field of Study: *Attended lecture series and hands-on practical session on Fluorescence microscopy, Electron microscopy, Super resolution microscopy, pre-clinical animal SPECT/CT imaging and overview of CT and MR image acquisition and post-processing in radiology on biomedical image analysis as well as obtained 4 ECTS.*

Winter School 2023 *Feb 2023*
University of Cassino and Southern Lazio-Italy
MSc, Software Engineering (SE) *Sep 2018 –Aug 2020*
Tianjin University, School of Computer Software, China
BSc, Computer Science & Engineering (CSE) *Oct 2010 -Feb 2014*
Bangladesh University (BU), Bangladesh

PROFESSIONAL TRAINING

Oracle Certified Professional (OCP) *Nov 2017*
IBCS-PRIMAX Software (Bangladesh) Ltd., Bangladesh
Professional Web Design & Development *Oct 2014*
BASIS Institute of Technology & Management (BITM), Bangladesh

EMPLOYMENT HISTORY & EXPERIENCE

Assistant IT Manager & Full Stack developer: Vision Eye Hospital, Bangladesh *Dec 2020 -Aug 2022*
Higher Education Research Assistant *Sep 2018 –Jan 2020*
Tianjin University, School of Computer Software, China
Web Application Developer *Oct 2019 -July 2020*
SystemBind Consulting & IT Services Inc. (Remote Job), Canada
Software Engineer: Vision Eye Hospital, Bangladesh *Oct 2017 -Aug 2018*
Web Application Developer: Make Good Media. (Remote Job), Canada *July 2016 -Jan 2017*
Software Engineer: Aptronix Ltd, Bangladesh *Oct 2017 -Aug 2018*
Software Engineer: Coderment Ltd, Bangladesh *Apr 2014 -July 2017*

TECHNICAL SKILLS

Programing Languages: Python*, MATAB, C++, PHP*
Machine learning: pyQt5*, SciPy, Scikit-Learn, NumPy*, Pandas*, Matplotlib*, OpenCV*
Deep Learning: PyTorch, Tensorflow
Web Application Tools: JavaScript, jQuery*, Vue.js/CLI*, RESTful API*, Git*, Json, XML

DevOps: GCP, AWS (EC2*, RDS, Load Balancing, Auto Scaling, S3*, CloudFront, Route53*, and CI/CD CodeDeploy), DigitalOcean*
Web Server: Apache*, Nginx*.
Databases: SQL, Oracle, MySQL*, SQLite
* Proficient

LANGUAGE SKILLS

Languages: Bengali- Mother tongue, English – B2, Chinese – A1, Franch- A1, Italiano-A1

ACADEMIC PROJECTS

Mouse Brain Segmentation using Deep Learning Jun 2024
In the first phase of our developmental pipeline focusing on mouse brain segmentation using deep learning, achieved a 99.23% accuracy in binary segmentation tasks between background and brain tissue. This success was accomplished utilizing the nnU-Net model on a dataset downscaled five times. Next steps involve testing with high-resolution images, for which I plan to implement RefineNet. The goal is to accurately segment mouse brain tissues into 24 distinct regions of interest within a 3D volume. For evaluating the performance of our models, we will use several metrics, including the Dice coefficient, Hausdorff Distance, precision, and recall, ensuring a comprehensive assessment of our segmentation accuracy and reliability.

Elastix-Based CT Image Registration for COPD Lung Analysis Jun 2024
This project at the University of Girona applies Elastix for registering CT lung scans of COPD patients, using data from the COPDgene study. The focus is on aligning scans from inhalation and exhalation phases to understand lung health better. Techniques like rigid, affine, and BSpline transformations are evaluated for their effectiveness in image registration, with a special emphasis on the role of preprocessing. The project's findings contribute to improving medical imaging in COPD management.

Optimizing Brain Tissue Segmentation Using Advanced Deep Learning Techniques Jun 2024
This project at the University of Girona focuses on enhancing brain tissue segmentation using a 2D U-Net model with a ResNet34 backbone. Addressing challenges in MRI image variability within the IBSR18 dataset, the project aims to accurately segment brain tissues into white matter, gray matter, and cerebrospinal fluid. It employs metrics like Dice Coefficient and Hausdorff Distance and incorporates data augmentation to improve accuracy.

Deep Learning-Based Skin Lesion Classification: A Computer-Aided Diagnostic Jun 2024
This project focuses on using deep learning techniques for the classification of skin lesions. Utilizing the ISIC dataset, it addresses binary and multiclass classification challenges through data preprocessing, augmentation, and neural networks like InceptionNet and EfficientNet. The project highlights the effectiveness of transfer learning in improving diagnostic accuracy, showcasing significant achievements in both binary and multiclass lesion classification.

Automated Skin Lesion Classification: A Comprehensive Analysis of Transfer Learning and Machine Learning Techniques (Group Project) Jun 2023
The classification of skin lesions (benign, melanoma, and seborrheic keratosis) using deep learning models and hybrid models (a combination of pre-trained and machine learning models) was done along with a comparison of the Balanced Multiclass Accuracy (BMA) of each model. The hybrid model, which combines Xception and Random Forest, produced a BMA score of 80%, which was the best.

Classification Challenge: Alzheimer's Disease Classification Using MRIs and Gene Expression Data Jun 2023
To categorize Alzheimer's disease (AD), mild cognitive impairment (MCI), and control (CTL), a classification system using feature engineering and machine learning approaches was developed. carried out a comparison analysis of the AUC and MCC scores across different categorization models.

Regression Challenge: Using Linear Regression and KNN Model Jun 2023
Developed a regression algorithm using linear regression and KNN regression and Root Mean Square Error (RMSE).

Bibliography Review: Comparative study with Automated Kidney Image Segmentation Based on Traditional & Deep Learning approach. *Sep 2022 -Jan 2023*
Studied research articles and prepared a review report on Automated Kidney Image Segmentation Based on Traditional & Deep Learning approaches and observed the advantages and drawbacks of each method.

Traffic (signal light) Simulation and Violation Detection *Sep 2022 -Jan 2023*
[Git] [Python, pyGame]

INDUSTRIAL PROJECTS

Hospital Information Management System [PHP, Laravel, Vue CLI, MySql, AWS]
Hospital management system is a web base system that helps manage the information related to health care and aids in the job completion of health care providers effectively. They manage the data related to all departments of healthcare such as prescription, financial, investigation, pharmacy, pathology. Up to this point, Bangladeshi 5 hospitals that use this ERP system.

Franchise Store Management System [PHP, Codeigniter, MySql, Bootstrap, jQuery, Ajax]
Control inventory levels across all your locations/stores, warehouses in real-time, so that it can make better purchase decisions & ready for sales at any time. Transfer stock/inventory between stores/warehouse is much easy that can maintain right stock level at each store.

B2B Ecommerce system [PHP, Laravel, Codeigniter, MySql, Bootstrap, jQuery, Ajax]
This type of ecommerce typically involves larger orders and longer sales cycles than B2C (Business-to-Consumer) ecommerce, as the purchases are often made by businesses for resale or to be used in the production of other goods and services.

CHALLENGE AND CODING CONTESTS

Datathon IA4care Apr 2024
Automated 3D Microscopic Volume Analysis for Hippocampus Segmentation in Mouse Brain.
Eseo - Grande School D'ingénieurs
University of Burgundy, Dijon, France

CI Image registration challenge Jan 2024
3d volume Image registering CT lung scans of COPD patients.
University of Girona, Spain

bitsxlaMarató 2023 Dec 2023
AI base solution for Sexual and Reproductive health Hackathon
Faculty of Informatics of Barcelona (FIB), Barcelona Supercomputing Center (BSC), Spain

Lleidahack, HackEPS 2023 Nov 2023
Ultimate 24-Hour AI based Solution Hackatho
Polytechnic School of the University of Lleida, Spain

Classification challenge May 2023
Alzheimer's disease using MRIs and gene expression data.
Italian National Research Council, Italy

Quazi Azher Ali SAARC Programming Contest Dec 2014
Problem solving contest using programing language.
Bangladesh University, Bangladesh

LINKS

Github | Linkedin

SCHOLARSHIPS AND AWARDS

Tianjin Government Scholarship
I received the Tianjin Government Scholarship in 2018, 2019, and 2020 while studying at Tianjin University in China. This scholarship was awarded by the local government of Tianjin, China, to support my studies during those respective years.

REFERENCES

Dr Arnau Oliver
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ERASMUS+ Joint Master program Medical Imaging & Applications (MAIA)
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