Mustaffa Hussain

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Portfolio
LinkedIn
Medium Blogs
Github

EDUCATION & CERTIFICATE

Qualification	Institution	CGPA/Percentage	Year Of Pass
M.Sc Computer Science	South Asian University	6.85 / 75%	2019
B.Sc Computer Science	Central University of Rajasthan	4.80 / 68%	2017
HuBMAP + HPA - Hacking the Human Body	Kaggle Competition	Bronze medal	2022

SKILLS

- **Programming Languages:** Python, C, C++
- **Frameworks:** Pytorch, Tensorflow, Pytorch lightning, Keras
- **Computer Vision:** Opencv, Classification, Object Detection, Segmentation, Image Processing
- **Dev/ML Ops:** GraphDBs, SQL, Flask Restful APIs, Git, Docker, AWS, GCP
- **Relevant Coursework**: Machine Learning, Statistics, Optimisation & Data Structures and Algorithms, Theory of computations, Operating systems

PROFESSIONAL EXPERIENCE

Onward Assist : Hyderabad,IN

Senior Machine Learning Scientist Dec 2020 - Till Now

- ER-PR Grading Tool: Led the development of ML models for the assessment ER and PR prognostic biomarkers in breast cancer. Developed a novel model for dense pixel-level prediction on WSIs. Technical paper targeted for FDA approval. Clinical Calibration study metric of ~83% accuracy on Allred score.
- HER2 Grading Tool: Led the development of ML models for assessment HER2 prognostic biomarker in breast cancer. Developed a novel model for dense pixel level prediction on WSIs. Technical paper targeted for FDA approval. Clinical Calibration study metric of 74% accuracy on HER2 score.
- KI67 Grading Tool: Led the development of ML models for assessment KI67 prognostic biomarker in breast cancer. Developed a novel model for dense pixel level prediction on WSIs. Technical paper targeted for FDA approval. Clinical Calibration study metric of ~85% accuracy on Proliferation index.
- PDL1 Grading Tool: Led the development of ML models for the assessment of PDL1 prognostic biomarkers in lung cancer. Novel model inspired by Unet, Hibou foundational model for dense pixel-level prediction on WSIs. Ongoing clinical study.
- Nottingham Grading Tool: Led the development of machine learning models for Mitosis, Tubules, and Pleaomorohism detections. Nottingham Scoring algorithm boosting breast cancer diagnosis accuracy by 30% compared to our previous baseline.
- Deployment: Integrated ML models into the web platform, utilizing GCP and Kubernetes for scale.
- Domain Generalisation in WSIs scanned from multiple scanners and multiple labs. Utilised Unpaired Image to Image generative modeling such as pix2pix, cycleGAN, and Schrodinger bridge to learn target distribution to standardize data pipelines.
- Image Coregistration of 3D CT and 3D PET scans using linear and affine transformations. Segmented tumor region from the above and reduced the turn around time of the radiologist by 70% on a single scan of 4 test subjects.

Myways : New Delhi,IN

Machine Learning Trainee May 2020 - Dec 2020

- Concepted Employability Positioning System(EPS) where the journey of a candidate is determined. Developed a recommendation engine using knowledge graphs for next skills to learn, online courses to upskill, and book recommendations.
- Developed analytics dashboard from 100GB of textual data for trending skills, trending books, trending papers etc.
- Trained custom NER and sentiment analysis models from customer feedback and fed the findings to analytics dashboard using Flask Rest APIs.
- Integrated candidate screening DoSelect(exam) APIs for EPS.
- Data wrangling from LinkedIn, Naukri, Internshala, etc for leads generation via automated cronjobs and crawlers.

Machine Learning and Statistical Inference Lab (MLSI-LAB) New Delhi,IN

Graduate Research Assistant Jul 2018 - Mar 2019

- The project investigates Multi-Task learning in SVMs.The project involved reading research articles, and papers and devising a solution to improve the existing models in use. Successfully developed a novel Multi-Task Learning framework based on Twin support vector machines under the supervision of Dr. Reshma Rastogi.

TECHNICAL WRITEUPS

- Switched auxiliary loss for robust training of transformer models for histopathological image segmentation.
- Robust Multi-Domain Mitosis Detection via Unpaired domain generalisation- MICCAI 2021 proceedings.
- Rastogi, Reshma, and Mustaffa Hussain. "Robust Multi-task Least Squares Twin Support Vector Machines for Classification." Advanced Machine Intelligence and Signal Processing. Singapore: Springer Nature Singapore, 2022. 393-405.

PROJECTS AND LEADERSHIP

Technical Project: Computer Vision

- **KEYE-** developed real-time video analytics safety monitoring system. The work looked at the detection of PPE kit violations, fire, spillage of liquids, crowd, wrong lanes, etc on real-time video feed from multiple IP cameras.
- **Deep learning Tutorial**- Setup tutorial notebooks for various computer vision models from classification, and segmentation to pose estimation, etc. I also explored model optimisation at inference with quantization.

Blogging: TheCyPhy@Medium

- Started a publication on Medium named TheCyPhy. We are 20+ writers and have 35+ published articles in the domain of ML and DL.
- Some of the articles written/moderated by me on TheCyPhy are ‘Impression Generation From Medical Imaging Report’, ‘Deploy Deep Learning Model Using Docker, Tensorflow Serving, Nginx and Flask’,’Lets Understand Object Recognition’,’Test drive with YOLO v4’ etc.

OTHER ACHIEVEMENTS

- Table Tennis and Badminton: Singles and Doubles winner in Intra University tournament.
- NCC: certificate A,B,C holder.
- Represented school at CBSE zonal meet for Hockey.