Abhishri Ajit Medewar

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EDUCATION

Master of Computer Science, Arizona State University — August 2021 - May 2023
Relevant Coursework: Machine Learning, Deep Learning — *GPA 3.8*

Bachelor of Computer Engineering, Pune University — August 2014 - May 2018
Relevant Coursework: Data Structures, Database Management Systems, Software Engineering — *GPA 3.7*

SKILLS

Programming Languages: Python, C++, C
Frameworks and Libraries: PyTorch, Tensorflow, Scikit-learn, Numpy, Scipy, Pandas, Matplotlib, Seaborn, Keras, OpenCV, BeautifulSoup, AWS, FFmpeg, Docker, S3
Web Technology and Database: Angular, Flask, HTML, CSS, MySQL, PostgreSQL, MongoDB, DynamoDB
Operating System/Developer Tools: Linux, Windows, Git, Jira, VS Code, Sublime text, Visual Studio, PyCharm

EXPERIENCE

Machine Learning Intern, Intel Corporation, Santa Clara, USA — June 2022 - April 2023

- Implemented distributed training for video frame interpolation model and performed hyperparameter optimization. This effort led to a remarkable **40% reduction** in inference time, enhancing performance significantly.
- Implemented CVPR-2019 paper's regularization approach in PyTorch. This implementation significantly enhanced the temporal stability of an image restoration model, leading to improved results.
- Worked on reproducing State-of-the-Art research paper results, leveraged **Docker** for efficient training.

Software Engineer- Machine Learning, Tata Elxsi, Pune, India — July 2018 - June 2021

- Implemented State-of-the-Art region-based microbial object detector using **Faster-RCNN** with **98%** accuracy and average inference time of 3sec/image on **Jetson TX2**, with image dimension of 2592x1944.
- Deployed an InceptionV2 and Faster-RCNN based object detector on **Nvidia Jetson TX2** using Tensorflow C++ API and **bazel.**
- Worked on **histogram-based contrast analysis** to find the optimum imaging parameters on a multi-channel imaging system which increased the overall device performance by **100x**.
- Implemented **clustering algorithm** for detecting small dust particles on camera lens, anti-reflection glass for optical system with overall accuracy of **95%**.
- Developed a web application using **Flask** server and **Angular** for seamlessly integrating regulatory authority websites(FDA, EMA), this enabled real-time extraction of up-to-date information.

PROJECTS

Deep Background: U-Net-Based Image Background Segmentation and Editing [Github] — Summer 2023

- Developed U-Net based image editor enabling seamless custom background editing.
- Implemented U-Net architecture from scratch, achieving an impressive 98.90% accuracy (dice score) in background segmentation using the Human Segmentation Dataset.

DeepLearn: Simplified CNN Training and Evaluation for Any Dataset [Github] — Spring 2023

- Implemented State-of-the-Art CNN architectures from scratch, such as GoogLeNet / InceptionV1, AlexNet, VGG (VGG-11, VGG-13, VGG-16, VGG-19), LeNet, and ResNet.
- Developed a versatile custom dataloader, enabling effortless integration of any image dataset. Integrated TensorBoard for real-time monitoring of model training.
- Designed a user-friendly interface allowing easy training and evaluation of image classification models by simply specifying dataset path and CNN architecture type.

Deep Learning Approach for Human Stress Detection[Github] — Summer 2018

- Developed custom CNN for detection of stress level (0-9) by using FER2013 dataset to identify the facial emotion of the person from an image and correlating the emotion percentage with stress level with 85% accuracy.

RESEARCH PAPERS

- **Medewar A. A.**, Kavitkar S. A., (2023, June 8), Is attentional channel processing design required? Comprehensive analysis of robustness between vision transformers and fully attentional networks, Preprint, https://arxiv.org/abs/2306.05495

ACHIEVEMENTS

- Received **Tata Elxsi Bravo Award** for outstanding work in image processing algorithm development and machine learning model fine-tuning.
- Exhibited strong leadership by driving Proof of Concept work at Tata Elxsi and securing funding from key clients.