Name: Abdul Rehman Faisal

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About Myself:

I am a final year electrical engineering student at NUST, specializing in machine learning and computer vision. Being an innovative tech enthusiast, I like to learn and try new things that can provide a solution to any of the modern world problems. This led me to a self-learning path during which I specialized in deep learning, learned about web development and programming different boards like Arduino and FPGA. Though, I am still in my final year but I am willing to do a part-time job or an internship in your company. Please consider me, below I have given my futher details.

Feel free to check my Linkedin.

https://www.linkedin.com/in/abdul-rehman-faisal-1101491b1/

Education:

BS Electrical Engineering   **National University of Sciences and Technology (NUST)**

CGPA: 3.50

Final Year Project:

Bone Cancer detection and classification using CT scans with hardware implementation on FPGA

A levels   **Lahore Grammar School (LGS)**

Grades: 1A*, 3A   **Subjects:** Computer Science, Mathematics, Physics, and Chemistry

Projects:

Model for Self-Driving Cars using Image Segmentation with Unet:

- Uses semantic image segmentation
- Uses CARLA self-driving car dataset
- Apply sparse categorical crossentropy for pixelwise prediction
- Uses a matching number of convolutions for downsampling the input image to a feature map, and transposed convolutions for upsampling those maps back up to the original input image size
- Adds skip connections, to retain information that would otherwise become lost during encoding
- Two parts: 1) Encoder 2) Decoder
- Contracting path follows a regular CNN architecture, with convolutional layers, their activations, and pooling layers to downsample the image and extract its features
- Decoder upsamples the features back to the original image size
- Uses an equal number of convolutional blocks and transposed convolutions for downsampling and upsampling

Car Detection using YOLO:

- Requires only one forward propagation pass through the network to make predictions
- Uses non-max-suppression
- Input image goes through a CNN, resulting in a (19,19,5,85) dimensional output
- After flattening the last two dimensions, the output is a volume of shape (19, 19, 425)
- Throws away boxes that have detected a class with a score less than the threshold
- Compute the Intersection over Union and avoid selecting overlapping boxes
- Pre-trained model was used

Face Recognition system using One-shot Learning:

- Posed face recognition as a binary classification problem
- Implemented one-shot learning for a face recognition problem
- Applied the triplet loss function to learn a network's parameters in the context of face recognition
- Mapped face images into 128-dimensional encodings using a pretrained model

Art Generation using Neural Style Transfer:

- Given a content image C and a style image S can generate an artistic image
- Uses hidden layer activations based on a pretrained ConvNet
- Content cost function is computed using one hidden layer's activations
- Style cost function for one layer is computed using the Gram matrix of that layer's activations. The overall style cost function is obtained using several hidden layers.
- Optimizing the total cost function results in synthesizing new images.
- Optimization algorithm updates the pixel values rather than the neural network's parameters

Animal Classifier using Transfer Learning with MobileNet:

- Created a dataset from a directory
- Augmented data with the Sequential API
- Adapted a pretrained model to new data with the Functional API and MobileNet
- Fine-tuned the classifier's final layers and boosted the model's accuracy

Face Verification System using FaceNet:

-Uses an ID card and a live picture to identify a person.
-A 1:1 matching system.
-Requires small dataset.
-Encodes a face image into a vector of 128 numbers. By comparing two such vectors, you can then determine if two pictures are of the same person.
-Compares the two images pixel-by-pixel.
-If the distance between the raw images is below a chosen threshold, it may be the same person.
-Uses Triplet loss function.

Sign Language Reader using ResNet50:

- A powerful model for image classification when it's trained for an adequate number of iterations
- Uses skip connections

- Skip connection makes it very easy for one of the blocks to learn an identity function
- An identity function accounts for ResNets' remarkable performance even more than skip connections help with vanishing gradients
- IDENTITY block and CONVOLUTIONAL blocks are used

Certifications:

I am currently studying my last course of Sequence Models that will complete my deep learning specialization from deeplearning.ai, which is entirely taught by Andrew Ng ☺

Convolutional Neural Networks

DeepLearning.AI

Instructor: Andrew Ng

Credential: https://www.coursera.org/account/accomplishments/certificate/P943256PKAYL

Structuring Machine Learning Projects

DeepLearning.AI

Instructor: Andrew Ng

Credential: https://www.coursera.org/account/accomplishments/certificate/KQP22C9K6VYF

Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization

DeepLearning.AI

Instructor: Andrew Ng

Credential: https://www.coursera.org/account/accomplishments/certificate/YBDJZZ8U5MX3

Neural Networks and Deep Learning

DeepLearning.AI

Instructor: Andrew Ng

Credential: https://coursera.org/share/a5ec1b0fefadcb6d0fcaa8786599f6bf

Supervised Learning with scikit-learn

DataCamp

Credential: https://www.datacamp.com/statement-of-accomplishment/course/0509d90536ac6305181a0cb99ca2751267338fe2

Python for DataScience

Cognitive Classes (IBM)

Credential: https://courses.cognitiveclass.ai/certificates/173eda088e654f3cb52d49ee6529038b

Technical Work Experience:

Engineers are magicians who have been using science to make stark and unexpected technologies. We have provided solutions to many problems and helped this world grow and make the lives of people easier. Work experience is important for an engineer because without it, all the knowledge he possesses is just a theory with no use.

Centralized Engineering Intern

Interloop limited

Lahore

July 2022 – September 2022

- Made an Automatic and Intelligent Quality Assurance Prototype System using neural networks with an 80% accuracy.
- Presented the idea for the practical implementation of this system on Knitting and Finishing Machines.
- Matter of Pride for me as this was the first artificial intelligence project in Interloop and I took this initiative.
- Learned about Inverters, PLCs and power circuits.

Web Development Intern

Baskt Online Store

Islamabad

July 2021 – September 2021

- Learned about HTML, CSS, JAVASCRIPT, React and Node.
- Started working on my portfolio website.
- Gained some valuable interpersonal skills.

Freelance Math Expert

PhotoMath

September 2020 – present

- Solver and reviewer of math solutions.
- Have solved and reviewed over 5000+ math questions of algebra, calculus and geometry.