



FINAL YEAR PROJECT REPORT

IMPROVING FACE RECOGNITION UNDER RAINY CONDITIONS USING ADVANCED COMPUTER VISION TECHNIQUES

**In fulfillment of the requirement
For degree of
BS (COMPUTER SCIENCES)**

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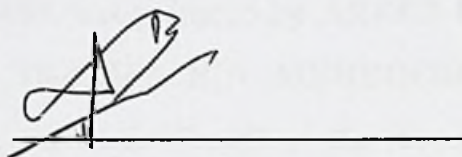
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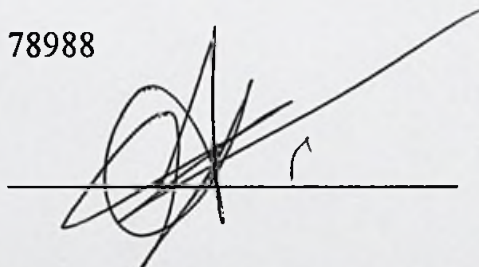
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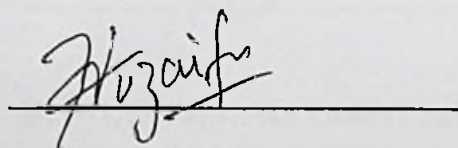
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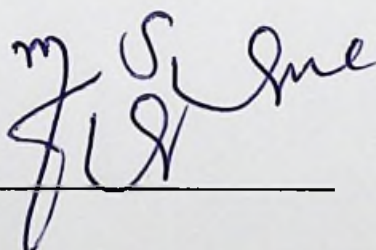
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APPROVAL FOR SUBMISSION

I certify that this project report entitled **“IMPROVING FACE RECOGNITION UNDER RAINY CONDITIONS USING ADVANCED COMPUTER VISION TECHNIQUES”** was prepared by **AREEB UR REHMAN, ARHAM TANVEER MALLICK, HUZAIFA BIN MEHBOOB** has met the required standard for submission in partial fulfilment of the requirements for the award of Bachelor of Science in **Computer Science** at Bahria University, Karachi.

Approved by,

Signature :

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IMPROVING FACE RECOGNITION UNDER RAINY CONDITIONS USING
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ABSTRACT

The purpose of this project is to develop a facial recognition algorithm having high accuracy under rainy conditions. This report explores several techniques to solve the challenges of rain artefacts, which are noise, blur and distortion of facial features in images. A number of different stages of image processing are studied and discussed including rain augmentation, rain removal, and model training. In this project, we evaluated several methods in order to select the ID-CGAN for deraining. The rain vector and blend generates rain streaks to augment images as noise to simulate rain. Next, the ID-CGAN model is used for deraining, yet preserving the facial features, while being aware that it should remove rain artifacts while not affecting facial features. Then, two facial recognition models are trained using FaceNet technique based on the augmented rainy images and the augmented images post deraining.

First, the rain artifacts are augmented on the dataset and then the ID-CGAN deraining is applied on the image to enhance the image quality. It compares the accuracy of the trained facial recognition models in recognising faces under rainy conditions vs post deraining. This system is designed to be robust and reliable in the areas of use such as security systems, surveillance and identity verification.

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