NANYANG TECHNOLOGICAL UNIVERSITY
SINGAPORE

School of Computer Science and Engineering
College of Engineering

Face Super-Resolution

with Large Pose Variation

Student: Lim Sheng Zhe

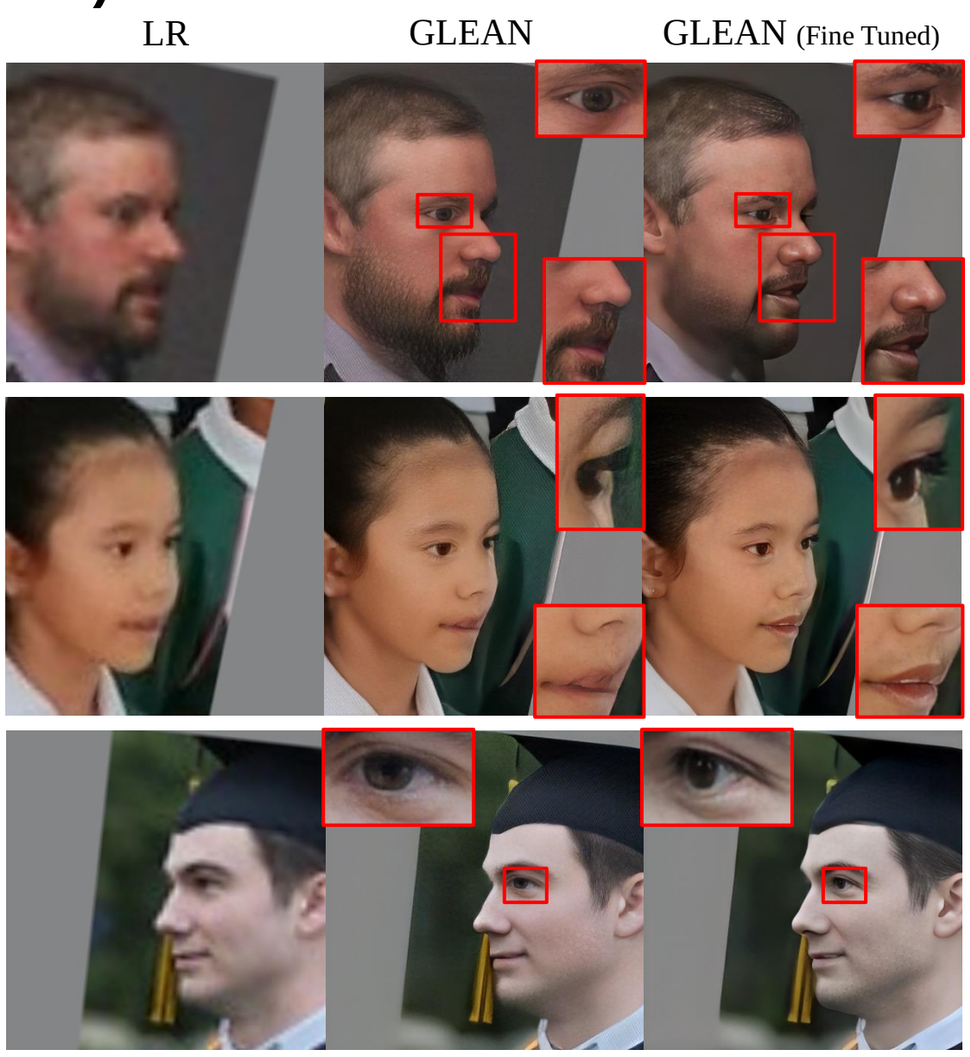
Supervisor: Prof Chen-Change Loy

Project Objectives:

Face super-resolution (FSR), a technique used to recover high-resolution facial information from low-resolution has received great attention over the past decades. Despite recent improvements, extreme face poses input remains challenging to the FSR work. As most FSR researchers focus on frontal and semi-frontal FSR, the performance of large face pose always be left out. To address this situation, this project aims to analyze and fine-tune a novel FSR architecture GLEAN on large face pose low-resolution image inference. Besides, a new cropped face dataset that contains over 200k+ images was also proposed for the evaluation of FSR performance.

Fine-tuned Result:

Generative Latent Bank (GLEAN), a novel solution for a large-factor image super-resolution task is used as the base FSR architecture for fine-tuning on large pose face. As high-quality large face pose images are hard to obtain, some training data are manually filtered super-resolution face images by **GAN Prior Embedded Network (GPEN)**.



Face Dataset:

Images are mainly retrieved from Flickr and Google. Faces from these images are then cropped to form this dataset. The primary objective of this face dataset is to encourage the community to focus on a small scale, extreme pose and heavily corrupted old face super-resolution problems.