**Project 4: Artificial Intelligence and Machine Learning for Computer Vision**

**ESE 358 and ESE 568 Computer Vision**

**ECE, SBU, Fall 2023, Murali Subbarao**

Complete the following tutorials and submit a combined report in pdf/docx format with input, output, list of steps followed, and source code. Add references and weblinks as needed in the Bibliography section.

**ALL STUDENTS: COMPLETE ANY FOUR (AND ONLY FOUR) FROM THE FOLLOWING LIST OF 7 TOPICS.**

**CLICK ON THE LINKS FOR A FULL DESCRIPTION (10 POINTS EACH)**

1. [Convolutional Neural Network (CNN)  |  TensorFlow Core](https://www.tensorflow.org/tutorials/images/cnn)
2. [Image classification  |  TensorFlow Core](https://www.tensorflow.org/tutorials/images/classification)
3. [Transfer learning and fine-tuning  |  TensorFlow Core](https://www.tensorflow.org/tutorials/images/transfer_learning)
4. [Data augmentation  |  TensorFlow Core](https://www.tensorflow.org/tutorials/images/data_augmentation)
5. [Image segmentation  |  TensorFlow Core](https://www.tensorflow.org/tutorials/images/segmentation)
6. [TensorFlow Hub Object Detection Colab](https://www.tensorflow.org/hub/tutorials/tf2_object_detection)
7. [Generate Artificial Faces with CelebA Progressive GAN Model  |  TensorFlow Hub](https://www.tensorflow.org/hub/tutorials/tf_hub_generative_image_module)

**ESE 358 STUDENTS: SKIP THE PART BELOW**

**ESE 568 STUDENTS: COMPLETE ANY ONE (AND ONLY ONE) FROM THE FOLLOWING LIST OF 4 TOPICS**

**CLICK ON THE LINKS FOR A FULL DESCRIPTION (10 POINTS)**

1. [Neural style transfer  |  TensorFlow Core](https://www.tensorflow.org/tutorials/generative/style_transfer)
2. [DeepDream  |  TensorFlow Core](https://www.tensorflow.org/tutorials/generative/deepdream)
3. [High-performance image generation using Stable Diffusion in KerasCV  |  TensorFlow Core](https://www.tensorflow.org/tutorials/generative/generate_images_with_stable_diffusion)
4. [Deep Convolutional Generative Adversarial Network  |  TensorFlow Core](https://www.tensorflow.org/tutorials/generative/dcgan)