MATH 3320 Project Specification

October 31, 2021

You may form a group of at most 2 students. You need to hand in a report of length between 5 and 20 pages. The deadline of the report is 30th, November 2021.

Topics include:

- Select one chapter, reduce it to 1/3 of the original chapter.

- Melody creation based on humming. Your code should be able to capture the voice from your humming and automatically generate a music score.

- Disease diagnosis based on medical image.

- Facial recognition. Your code should be able to recognize a target person from the images.

- Handwritten Chinese character recognition. Your code can verify the Chinese character that you write by hand.

- Number recognition.

- Number plate recognition. Your code should recognize the number plate in an image and verify the numbers and letters on the number plate.

- Image stitching. Given images with overlapping parts, your code should combine them together and form a visually satisfactory image.

- Image colorization. Given grayscale images, your code should transform them into colored ones.

- Image compression. You may try different models and methods to reduce the storage of images without losing important information.

- Image super-resolution. You are required to construct high resolution images from those in low resolution.

- Interpretable machine learning experiment. Use real data and models taught in our course to carry out statistical learning project.

- Any other topics related to data science.