HW2-Q3

1. Digital watermark

Watermarking technology can work as computer information hiding technology based on content and non-password mechanism. It is to embed some identification information directly into the digital carrier (including multimedia, documents, software, etc.) or indirect representation (modifying the structure of a particular area), and does not affect the use value of the original carrier, nor is it easy to be detected and modified again. But it can be identified and identified by the producer.

Digital watermark is an effective way to protect information security, realize anti-counterfeiting traceability and copyright protection, and it is an important branch and research direction in the field of information hiding technology.

2.Tasks:

1) Please describe your algorithms in words or flowcharts. (2 scores)
2) Develop a digital watermarking program based on proper transform. Add 'LOGO_CS270.mat' as a watermark to 'WuYuan.mat', and save the new image as 'Shangrao.mat'. The new image must look like original image.(3 scores)

Fig.1 LOGO

Fig.2 Wuyuan

Fig.3 Reference result 1

3) Develop another program which can extract the ‘LOGO_CS270.mat’ from ‘Shangrao.mat’. (3 scores)

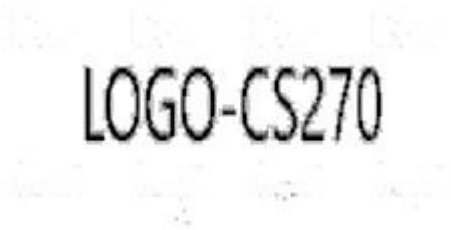

Fig.4 Reference result 2

4) Add Gaussian noise into the image Shangrao.mat, and save the new image as ‘SRnoise.mat’. Then extract the ‘LOGO_CS270.mat’ from ‘SRnoise.mat’ to test the robustness of task 3 programs. (2 scores)