Weekly Report: Digital Image Watermarking and Extraction

Project Number: 20

1 Introduction

This week, we continued to improve the watermark extraction process based on the feedback and observations from the previous week. We discussed the effects of different image attacks on watermark quality and explored methods for enhancing extraction.

2 Research

To test the strength of the watermark, we incorporated several image attacks, including Gaussian noise, rotation, and scaling. In order to increase the level of extraction accuracy, we experimented with filtering and thresholding prior to extraction with DFT.

We measured the robustness by comparing the Peak Signal-to-Noise Ratio (PSNR) and Normalised Correlation (NC) of every attack. The findings indicated that the watermark is resistant to weak attacks, but it is sensitive to extreme distortions.

3 Conclusion

Work done this week:

- Implemented additional image attacks (noise, rotation, scaling)
- Applied filters and thresholding to enhance extraction accuracy
- Compared results using PSNR and NC metrics

Work to be done next week:

- Try hybrid domain watermarking (DFT + DCT) for better robustness