Weekly Report: Digital Image Watermarking and Extraction

Project Number: 20

1. Introduction

In this final week, we focused on completing the remaining components of our digital image watermarking project and consolidating all findings from the previous weeks. After implementing and testing the hybrid DCT + DFT approach, this week's efforts were primarily dedicated to improving geometric robustness and analysing the effects of key watermarking parameters. We ensured that all experiments were systematically verified and that the overall pipeline—from embedding to extraction—was refined for consistency and clarity.

2. Implementation

This week, we integrated geometric normalisation methods to enhance resistance against rotation and scaling attacks. We also performed a detailed study of the three major factors influencing watermarking quality—imperceptibility, robustness, and payload—by varying their parameters and analysing their effects on PSNR and NC metrics. Finally, we organised all experimental results, tabulated the observations, and compiled them for inclusion in the final report.

3. Conclusion

Work done this week:
- Added geometric normalisation.
- Analysed watermarking trade-offs: imperceptibility vs. robustness vs. payload.
- Performed final testing, verification, and parameter fine-tuning.
- Compiled and organised all results for final report submission.
- Reviewed the complete hybrid DCT + DFT workflow for consistency.

Since this is the final week, no further tasks remain.