



**Silesian University
of Technology**

**FACULTY OF AUTOMATIC CONTROL, ELECTRONICS
AND COMPUTER SCIENCE**

Master Thesis

Improving the efficiency of lossless image compression
using extensions of Part 2 of the JPEG 2000 standard

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O Ś W I A D C Z E N I E

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Abstract

Abstract

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Chapter 1. Introduction

1.1 Intro

Foo

Chapter 2. Idea

2.1 Idea

Foo

Chapter 3. Assumptions

3.1 Assumptions

Foo

Chapter 4. Implementation

4.1 Implementation

Foo

Chapter 5. Results

5.1 Section 1

Foo

5.2 Section 2

Bar

Chapter 6. Summary

6.1 Results

Foo

6.2 Conclusions

Bar

6.3 Future development

Baz

Bibliography

- [1] C++ reference. <https://en.cppreference.com/>. [Latest available: 20.09.2020].
- [2] Cmake. <https://cmake.org/>. [Latest available: 20.09.2020].
- [3] Jpeg 2000. https://en.wikipedia.org/wiki/JPEG_2000/. [Latest available: 20.09.2020].
- [4] Kakadu. <https://kakadusoftware.com/>. [Latest available: 20.09.2020].
- [5] Python. <https://www.python.org/>. [Latest available: 20.09.2020].
- [6] Scott Meyers. *Effective Modern C++*. O'Reilly Media, 2014.
- [7] Roman Starosolski. Skipping selected steps of dwt computation in lossless jpeg 2000 for improved bitrates. *Plos one*, 2016.
- [8] Roman Starosolski. A practical application of skipped steps dwt in jpeg 2000 part 2-compliant compressor. *Springer Link*, 2018.
- [9] Roman Starosolski. Reversible denoising and lifting based color component transformation for lossless image compression. *Springer Link*, 2019.
- [10] Bjarne Stroustrup. *The C++ Programming Language*. Pearson Education, 2013.
- [11] Bjarne Stroustrup. *A Tour of C++*. Pearson Education, 2013.
- [12] Anthony Williams. *C++ Concurrency in Action*. Manning Publications, 2019.