ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Task-Aware-Downscaling
Improving Super Resolution and Colorization in Image and Video Domain

Semester Project

Simon Schaefer

Advisor: Dr. Radu Timofte, Shuhang Gu
Supervisor: Prof. Dr. Luc van Gool
Computer Vision Laboratory
Department of Information Technology and Electrical Engineering

May 18, 2019

Abstract

The abstract gives a concise overview of the work you have done. The reader shall be able to decide whether the work which has been done is interesting for him by reading the abstract. Provide a brief account on the following questions:

- What is the problem you worked on? (Introduction)

- How did you tackle the problem? (Materials and Methods)

- What were your results and findings? (Results)

- Why are your findings significant? (Conclusion)

The abstract should approximately cover half of a page, and does generally not contain citations.

Acknowledgements

Contents

List of Figures

List of Tables

Chapter 1

Introduction

Give an introduction to the topic you have worked on:

- *What is the rationale for your work?* Give a sufficient description of the problem, e.g. with a general description of the problem setting, narrowing down to the particular problem you have been working on in your thesis. Allow the reader to understand the problem setting.

- *What is the scope of your work?* Given the above background, state briefly the focus of the work, what and how you did.

- *How is your thesis organized?* It helps the reader to pick the interesting points by providing a small text or graph which outlines the organization of the thesis. The structure given in this document shows how the general structuring shall look like. However, you may fuse chapters or change their names according to the requirements of your thesis.

Chapter 2

Related Work

Describe the other's work in the field, with the following purposes in mind:

- *Is the overview concise?* Give an overview of the most relevant work to the needed extent. Make sure the reader can understand your work without referring to other literature.

- *Does the compilation of work help to define the "niche" you are working in?* Another purpose of this section is to lay the groundwork for showing that you did significant work. The selection and presentation of the related work should enable you to name the implications, differences and similarities sufficiently in the "discussion" section.

Chapter 3

Materials and Methods

The objectives of the "Materials and Methods" section are the following:

- *What are tools and methods you used?* Introduce the environment, in which your work has taken place - this can be a software package, a device or a system description. Make sure sufficiently detailed descriptions of the algorithms and concepts (e.g. math) you used shall be placed here.

- *What is your work?* Describe (perhaps in a separate chapter) the key component of your work, e.g. an algorithm or software framework you have developed.

Chapter 4

Experiments and Results

Describe the evaluation you did in a way, such that an independent researcher can repeat it. Cover the following questions:

- *What is the experimental setup and methodology?* Describe the setting of the experiments and give all the parameters in detail which you have used. Give a detailed account of how the experiment was conducted.

- *What are your results?* In this section, a *clear description* of the results is given. If you produced lots of data, include only representative data here and put all results into the appendix.

Chapter 5

Discussion

The discussion section gives an interpretation of what you have done [1]:

- *What do your results mean?* Here you discuss, but you do not recapitulate results. Describe principles, relationships and generalizations shown. Also, mention inconsistencies or exceptions you found.

- *How do your results relate to other's work?* Show how your work agrees or disagrees with other's work. Here you can rely on the information you presented in the "related work" section.

- *What are implications and applications of your work?* State how your methods may be applied and what implications might be.

Make sure that introduction/related work and the discussion section act as a pair, i.e. "be sure the discussion section answers what the introduction section asked" [1].

Chapter 6

Conclusion

List the conclusions of your work and give evidence for these. Often, the discussion and the conclusion sections are fused.

Appendix A

The First Appendix

In the appendix, list the following material:

- Data (evaluation tables, graphs etc.)

- Program code

- Further material

Bibliography

[1] R.A. Day and B. Gastel. *How to Write and Publish a Scientific Paper.* Cambridge University Press, 2006.