# BRNO UNIVERSITY OF TECHNOLOGY
**VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ**

## FACULTY OF INFORMATION TECHNOLOGY
**FAKULTA INFORMAČNÍCH TECHNOLOGIÍ**

## DEPARTMENT OF INFORMATION SYSTEMS
**ÚSTAV INFORMAČNÍCH SYSTÉMŮ**

# PROCESSING OF THE BLOCKCHAIN EMPLOYING IPFS
**VYUŽITÍ IPFS PRO ZPRACOVÁNÍ BLOCKCHAINU**

## MASTER'S THESIS
**DIPLOMOVÁ PRÁCE**

**AUTHOR**
**AUTOR PRÁCE**

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**SUPERVISOR**
**VEDOUCÍ PRÁCE**

**Ing. VLADIMÍR VESELÝ, Ph.D.**

**BRNO 2020**

## Abstract

Do tohoto odstavce bude zapsán výtah (abstrakt) práce v anglickém jazyce.

## Abstrakt

Do tohoto odstavce bude zapsán výtah (abstrakt) práce v českém (slovenském) jazyce.

## Keywords

Sem budou zapsána jednotlivá klíčová slova v anglickém jazyce, oddělená čárkami.

## Klíčová slova

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## Reference

MÚČKA, Matúš. *Processing of the Blockchain Employing IPFS*. Brno, 2020. Master's thesis. Brno University of Technology, Faculty of Information Technology. Supervisor Ing. Vladimír Veselý, Ph.D.

# Processing of the Blockchain Employing IPFS

## Declaration

Prohlašuji, že jsem tuto bakalářskou práci vypracoval samostatně pod vedením pana X... Další informace mi poskytli... Uvedl jsem všechny literární prameny, publikace a další zdroje, ze kterých jsem čerpal.

. . . . . . . . . . . . . . . . . . . . . .

Matúš Múčka

November 9, 2019

## Acknowledgements

V této sekci je možno uvést poděkování vedoucímu práce a těm, kteří poskytli odbornou pomoc (externí zadavatel, konzultant apod.).

# Contents

# Chapter 1

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Once the abstract is finished, you can start with the text of the technical report. The first thing you should do is create a structure for your work, that you'll later fill with text. Chapter **??** provides basic information and hints on writing a technical text, that can help you avoid mistakes beginners make, create chapter titles and figure out what the approximate length of individual chapters should be. The chapter concludes with an approach that should make writing a thesis much easier.

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The final chapter of a thesis is always followed by a list of references. Citations that this list is comprised of and their respective links is the subject of chapter **??**. An inexperienced student may not perceive it that way, but the list of references is a vital part of a thesis. One of the important aspects of your reviewer's evaluation is how you work with literature. A single missing entry can lead to an F for your grade, disciplinary proceedings for plagiarism and ultimately to being expelled. There are other consequences to this as two czech ministers resigned over allegations of plagiarism in 2018. Be as thorough as possible in creating your list of references.

When you're done with the text, it is necessary to figure out what the requirements for a thesis at BUT FIT are and work the kinks out. Formal requirements that are stated in regulations and at faculty web pages can be found in chapter **??**. This chapter also contains information about the required length of different types of academic works and other helpful information. The chapter concludes with an overview of the most common mistakes that the reviewers have to deal with and that you should avoid. The review of the formal aspect of thesis is just another important part of the reviewer's assessment.

Once you deal with the formal deficiencies, you can sumbit your thesis. Before you do so, go through the checklist in appendix **??**. The submission of paper and electronic versions of a thesis is described in chapter **??**.

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First and foremost - abstract matters. Second - It's not that hard to write one. Without further ado, let's dive into it.

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## When and how to write an abstract

It makes the sense to write an abstract when the writing is done – as a summary and real annotation of the thesis. I however like the opposite approach – write an abstract in the beginning. Whenever I write a scientific article, I start with a long list of keywords that are

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I consider the following four parts of an abstract especially useful – Which problem does it solve? What solution does it offer? What are the results? What is the meaning of these results? Once all of this is clear, the text essentially writes itself. If this is unclear, how on earth can you form a coherent, meaningful sentence in the same text?

## Recommended structure of the abstract

An abstract of a scientific thesis can consist of four parts and be useful. Each individual part consists of two to three sentences, in some cases even a single sentence is enough.

The term "elevator pitch" is often used in bussiness. It is not a coincidence that its structure is similar to the recommended structure of an abstract. Realistically, an abstract should contain anything the author would say about their scientific thesis if they had at most 2 minute and could not use slides, images or text. What should they talk about then?

**Part one – What is the problem? What is the topic? What's the goal of the text?**

- This thesis deals with.

- The goal of this thesis is.

- My aim was.

There is no place for fairy tales specific to wrong scientific literature: "Our five-year-plan of work open new and bold goals for us", "With the evolution of computing technology and especially the display devices, it is more important than ever . . . " do not belong anywhere near a good text, especially an abstract. If you can express the purpose of your text in one sentence, do it and forget about everything else. Less is always more when it comes to the abstract.

**Part two – How is the problem solved? Is the goal fulfilled?**

- I solved the problem using this and that.

- I used this method, this procedure and analysed this.

- The work represents an algorithm that.

- I used these tools to process data and evaluated results like this.

- The principle of our algorithm is.

There is a new methodology in the nature of scientific text (= "how to do something"), it needs to include a description. If the solution consists of three parts, it probably means that this part of an abstract will have three sentences, where each sentence is about a different part of the solution. A good abstract is be honest and accurate in this section – no "revealing secrets" in the text itself. Vague formulations of a solution principle in an abstract usually means that the authors can't write or don't have anything to write about – neither one is good enough to waste your time.

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- It was 87,3 % successful.

- We created a system that.

- The solution offers these options.

- As a result, we found out that.

Stating a specific number is not a bad habit in this part – "we made existing XY method five times faster". If the contributon of your work cannot be summarized in two or three sentences, something is wrong and the entire text is probably not worth writing.

**Part four – Well then? What does it bring to science and the reader?**

- The contribution of this thesis is.

- The primary discovery is.

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- Based on the data it is possible to.

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When writing scientific articles, I myself struggle with the similarity of third and fourth part. Both of them speak about the results and contribution of the text. The goal of the third part is to be specific and name achieved results whereas the goal of the fourth part is to interpret their meaning and significance. I guess it's fine if these two statements merge to an extent and both parts not only don't have their own paragraph, but they sometimes even intertwine with their common sentences.

**Part zero – What is it about? Where are we?**

- The context is this and this.

- It deals with studies of this and that.

- We build on these recent advances in our field.

Sometimes it is necessary to insert a short specification of context at the beginning of your abstract. It can be a great asset when it comes to obscure and esoteric field, that is off to the side of the main flow. Usually this part is not needed and sentences contained here are prime examples for pseudoscientific nonsense. It's not necessarily bad to forget that this part can even exist in an abstract. If an expert in the field shakes their head after reading an abstract: "I have no idea what this is about." only then it makes sense to include this part to specify context.

**Innovation is not ignorance**

In this text I describe a general model of a general thesis. I would like to state that this is my opinion and taste and I'm interested in alternate opinions and tastes (I really am!). Every graduate (Mgr. and Bc.) feels that their thesis is special and extraordinary. Therefore they won't follow some scheme meant for common and average theses – i.e. the others. I see good reasons to divert from the outlined scheme and recommend some students to divert from the scheme myself every year. Indeed, every thesis is unique and extraordinary. If they weren't, there would be no reason to write them, just copy them instead. Before you divert from the standard and canonical way of organizing scientific text, put some effort into learning, understanding and tackling it. The way of scientific work, structuring scientific text or citing sources can look rigid and clumsy, but for now it is the best way mankind could come up with. If you learn it, understand it's advantages and disadvantages and innovate it, it's great and you're welcome to do so. If you choose to ignore it, you'll most likely end up with a very poor innovation.

# Chapter 3

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This text summarized the formal requirements for a technical report of a bachelor's thesis or a dissertation. It described the usual procedures used when writing a text of technical nature and offered additional information and independent useful hints and tips for creation of a technical report of a dissertation. It was also explained that a bachelor's thesis also a dissertation and needs to be approached as such.

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Your supervisor can help you significantly when it comes to correcting errors. However, do not expect them to read through your work the night before submission deadline. For that reason, it is necessary to have everything ready in advance and consult your supervisor as you write your dissertation. Supervisor's critical viewpoint can allow for a better result and the extra effort will have a positive effect on their evaluation of the work.

Lastly, on behalf of all the authors, I would like to wish everyone currently in development of their own dissertation and those who are getting ready to start developing it a successful completion and presentation of their work.

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# Bibliography