# Introduction

The introduction of the thesis has three main parts divided in the 2 subchapters below:

1. Context and motivation – What is the domain where the work is conducted. What is the problem identified? How can the problem be measured? What metric is used? (e.g. energy consumption, request/second, throughput, runtime, frames/second, accuracy, etc.). How does the current thesis address these issues? Give a short description of the solution, and how it will tackle the problems identified.
2. The thesis structure.

## Project Context

## Thesis Structure

# Project Objectives and Requirements

This section presents the paper objectives, functional and non-functional requirements and metrics used to evaluate the solutions.

## Main Objective

The main objective of this thesis is to study, design and implement an…

## Secondary Objectives

The secondary objectives are listed in the table below…. Each row contains a brief description of the objective, and also a reference to the appropriate section in the thesis where that objective is discussed in more detail.

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Objective** | **Description** | **Reference** |
| 1 | Study already existing approaches. | Provide a brief description of already existing studies. | Ch. 3 |
| 2 | Study of the android API. | Learn the needed functionalities in order to implement the application in Kotlin programming language. | Ch.3 |
| 3 | Study of the RabbitMQ server. | Learn how to use the server in order to publish and consume messages. | Ch.3 |
| 4 | Study of the python libraries. | Choose among the existing libraries the ones which fit best fir the application | Ch.3 |
| 5 | Study about the MySQL connections. | Learn how to connect locally from an API to the database and perform queries. | Ch.3 |
| 6 | Count number of repetitions of a specified exercise. | Capture the signal produced by the accelerometer and analyze it in order to be able to convert it to the number of performed repetitions. | Ch.2 |
| 7 | Provide a graphical view of the personal records of a specified exercise. | Incorporate the feature of viewing the improvement in weight over time of a specified exercise. | Ch.2 |
| 8 | Provide additional information about the exercises. | Create the option of asking for supplementary information regarding the execution of each existing exercise. | Ch.2 |
| 9 | Visualize and download full workouts. | Create the feature of requesting detailed workout information performed on a specified day. Also add the option to download it to the external storage. | Ch.2 |
| 10 | Study about each provided exercise. | Find a description which suits best to be presented to the user for each exercise. | Ch.2 |

## Requirements

### Functional Requirements

### Non-Functional Requirements

## Metrics used for evaluation

Formulas and explanations for metrics given in introduction to evaluate solution.

# Bibliographic research

This section should contain about 20-30 papers studied in the domain. The papers should be classified in 2 or 3 directions. In the end, it should be highlighted what the proposed solution brings new compared to the state of the art.

E.g.

*The domain of optimizing the DC energy consumption is vast and there are various approaches. The state-of-the art solutions are classified in two directions: consolidation approaches that take into account only server power consumption and energy optimization techniques that take into account both the server and the cooling system of the DC*

## Consolidation Methods in Data Centers

One of the reasons for high energy consumption in DCs is the inefficient resource usage. For instance, servers usually operate at 10% up to 50% of their maximum capacity

………..

# Analysis and Theoretical Foundation

In this chapter you should describe in detail concepts and frameworks used from the articles studied in chapter 3.

You can finish the chapter with a high-level conceptual design of the system, indicating what algorithms and frameworks will be used, and mapping them to the high level components.

# Design and Implementation

The solution should be presented in 2 sub-chapters.

Usually the solution is split into a theoretical part and a practical one (the actual implementation). In these sections, you should present:

* 1. Design
* Formulas and mathematical models
* Data structures
* Algorithms
  1. Implementation
* System Conceptual Architecture
* System Deployment architecture
* Classes design and code snippets explained

# Experiments and Validation

The experimental section should present an evaluation of the proposed solution, considering a set of metrics. The section is split in two parts:

## Experimental Setup

This section should present:

* Data sources for data used in experiments (real or simulated)
* Metrics used to evaluate the solution
* Experimental setup description
* Algorithms and parameter values used in experiments
* Classical Algorithms/Methods used in comparisons.

## Experimental Results

This section should contain the scenarios used in experiments. The section can be either be constructed around a series of scenarios, or an exhaustive evaluation of the metrics on a large dataset can be shown.

# User Manual

## Installation Prerequisites

* Hardware and software requirements

## User Interaction

* Print screens of the application explained

# Conclusion

The conclusion of the thesis should close the objectives proposed in the second section. Furthermore, relevant figures of the evaluation section should be given to show the quality of the proposed solution