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## The CTUstyle template for student theses

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Tom Hejda introduced his work on a template for student theses at the TUG 2015 conference. The template is used at the Czech Technical University in Prague (CTU). The present article is intended as a companion to Tom’s article “Preparing L<sup>A</sup>T<sub>E</sub>X classes for journal articles and university theses”. In his article, the L<sup>A</sup>T<sub>E</sub>X point of view and comparison with another project is highlighted. In this article, on the other hand, the original development of the template (which has nothing to do with L<sup>A</sup>T<sub>E</sub>X) and the grounds for some typographical decisions are mentioned.

### Beginnings

In October 2012, students of the Czech Technical University in Prague started a discussion in an Internet forum [1] about the need for a good template for Bachelor, Master and Doctoral theses at our university. They mentioned that other universities have an interesting L<sup>A</sup>T<sub>E</sub>X template but CTU uses nothing centrally, while there are various L<sup>A</sup>T<sub>E</sub>X solutions with not-so-good typographical design in a few departments.

I gave my little contribution to this discussion forum too. I announced that I am able to suggest typographical design and I can implement this template by plain T<sub>E</sub>X macros only. I never offer a L<sup>A</sup>T<sub>E</sub>X solution because L<sup>A</sup>T<sub>E</sub>X is a bad way of T<sub>E</sub>X usage from my point of view and I don’t want to offer something that I believe is bad. Then I waited many months to see if somebody else would offer a L<sup>A</sup>T<sub>E</sub>X solution, but this did not happen. So, I started with typographical design and the implementation of student theses in January 2013. The implementation was based on my plain T<sub>E</sub>X OPmac macros [2] and the template was named CTUstyle [3].

Several students started to use my CTUstyle template and many of them complimented me that the template has a good design and it is simple to use. I want to emphasize that many of these students had no previous knowledge about T<sub>E</sub>X nor L<sup>A</sup>T<sub>E</sub>X, but they were able to simply use this template. This is contrary to the opinion that L<sup>A</sup>T<sub>E</sub>X is simpler to apply than plain T<sub>E</sub>X at the user level. This is not true when a good template is available.

Meanwhile, the template designer (like me) can realize a typographical design much more straightforwardly in plain T<sub>E</sub>X, because only primitives are used (like `\hbox` and `\vbox`) and the designer’s time isn’t dissipated by useless complexity in L<sup>A</sup>T<sub>E</sub>X.

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## Principles of thesis templates

We can consider the thesis template from different and independent points of view:

- The typographical design (independent of the software used).
- The implementation of university rules (for example what information must be in the first pages and where).
- The user interface.

The typographical issues will be mentioned in the next section of this article. The other two points of view can be illustrated by the following minimal example of CTUstyle usage:

```
\input ctustyle
\worktype [M/EN] % Master's thesis, in English
\faculty {F3} % one of 8 faculties at CTU
\department {Department of special studies}
\title {Minimal Document}
\author {Ben A Uthor}
\date {January 2013}
\abstractEN
  {This document is for testing purposes only.}
\abstractCZ
  {Tento dokument je pouze pro test.}
\declaration
  {I hereby declare I didn't monkey around.}
\makefront

\chap Introduction

The introductory text.

\sec The Idea

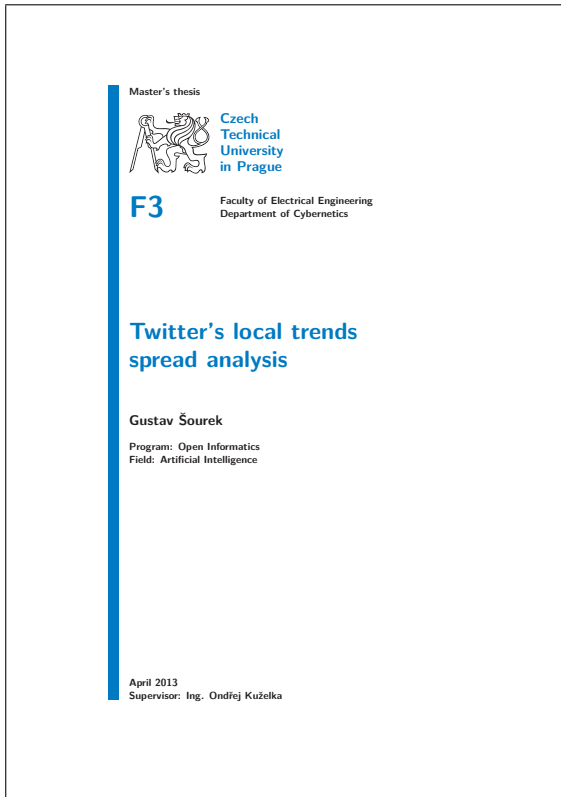
My big idea for this Master thesis is...

\bye
```

The user environment is designed to be like “filling in a form”. There are several mandatory fields which must be set. All of them are used in the minimal example above: `\worktype`, `\faculty`, `\author` etc. If a mandatory field is omitted then an appropriate error message is printed. The mandatory fields declare a minimum of information needed by university rules.

Optional fields can be defined here as well; for example, `\subtitle`, `\supervisor`, `\authorinfo`, `\thanks`, etc. All fields are documented in the CTUstyle documentation, which was created with the CTUstyle template in order to show the usage and the design of the template.

Then the `\makefront` command generates the first automatically created pages: title page, the declaration and thanks page, the abstract page (in two languages), the table of contents, the list of figures or tables (if present). For example, the full



**Fig. 1.** The CTUstyle title page.

This thesis by G. Šourek is fully available at [9].

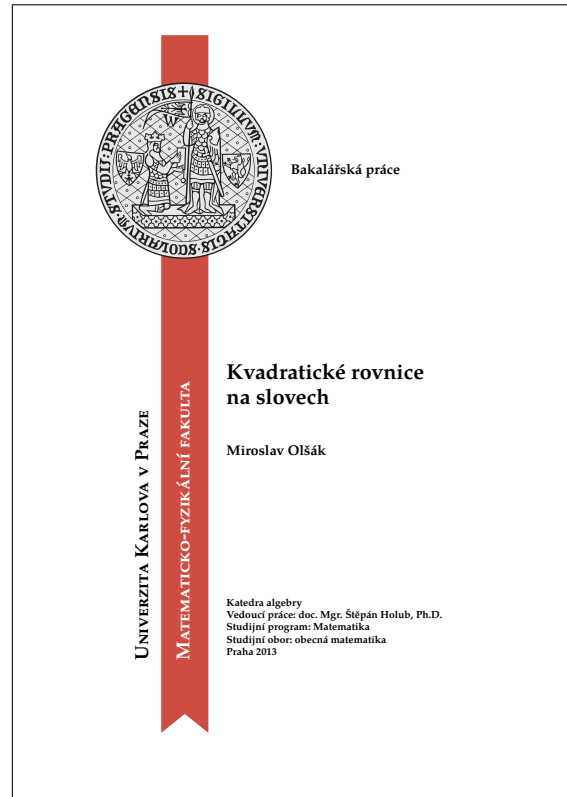
name of the faculty is printed in the title page but user needn't specify it; e.g., F3 means Faculty of Electrical Engineering.

The body of the work is structured using OPmac macros like `\chap` for chapter, `\sec` for section etc. These commands are described in OPmac documentation in detail and roughly in CTUstyle documentation.

### The typographical design

There are two big universities in Prague: Charles University (CU) [6] and Czech Technical University (CTU) [7]. I did the CTUstyle [3] template first for CTU and afterwards, I modified this template to CUSTyle [4] for CU.

The CTU is a technical university founded 300 years ago. I intended to create the template for CTU with a modern look and feel which can be used by students with enjoyment. I chose the technical font Latin Modern for the template because CTU is a technical university. I used the color decreed by the corporate identity of this university: blue Pantone 300 C. The complementary color (orange) is used as navigation color only for marking active hyperlinks and only in online version (disabled during printing).



**Fig. 2.** The CUSTyle title page

This thesis by M. Olšák is fully available at [10].

I decided to use the heavy blue rule seen in Fig. 1, inspired by the typographical manual of CTU. The first automatically generated pages (except the title page) are designed as two column. The body of the work is one-column and the pages are numbered from one in the body. This is one of the university's rules.

The whole work is designed as a two-side book with running heads that disappear into the middle of the binding. I assume that the document will be printed using a duplex printer with the capability of printing color. A non-duplex variant of the document can be set by `\onesideprinting` and a grayscale variant by `\blackwhite` but it is not recommended.

The CUSTyle for the Charles University copies the main principles of the design from CTUstyle, but the Pagella font was chosen because it looks more ancient. CU was founded in the Middle Ages in 1348 by Charles IV, King of Bohemia and King of the Romans. It was the first university in the Middle Europe. So the design of the font and of the title page reflects the history of CU. The red rule on the title page means the ribbon with the seal used by kings. On the other hand, the red color is specified in the corporate identity of this university.

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**Fig. 3.** The CTUstyle TOC page

This thesis by G. Šourek is fully available at [9].

Figures 1 to 4 show selected pages from these using CTUstyle and CUstyle.

## Next developments

I offer my help to students who are using my plain T<sub>E</sub>X templates. I make occasional small improvements to the template due to requests from the students. There are no big demands. I am happy that I have received many compliments and thanks from the students.

For example, I've recently created a new template for plain T<sub>E</sub>X slides with the same look as CTUstyle called CTUslides [5]. Students can do their presentations in the same style.

Sometimes, a suggestion is made at the discussion forum [1] like: "I wish to use this template but L<sup>A</sup>T<sub>E</sub>X seems better for me". I replied: "The typographical design is done and it is independent of the software used. You can use it in MS Word, for example, or in L<sup>A</sup>T<sub>E</sub>X. I don't recommend either but people can prefer something different than I. Anybody can do the implementation of my template with other software." But no such "anybody" appeared after two years. So, I decided to contact Tom Hejda, because I knew him as `tohecz`, a user from

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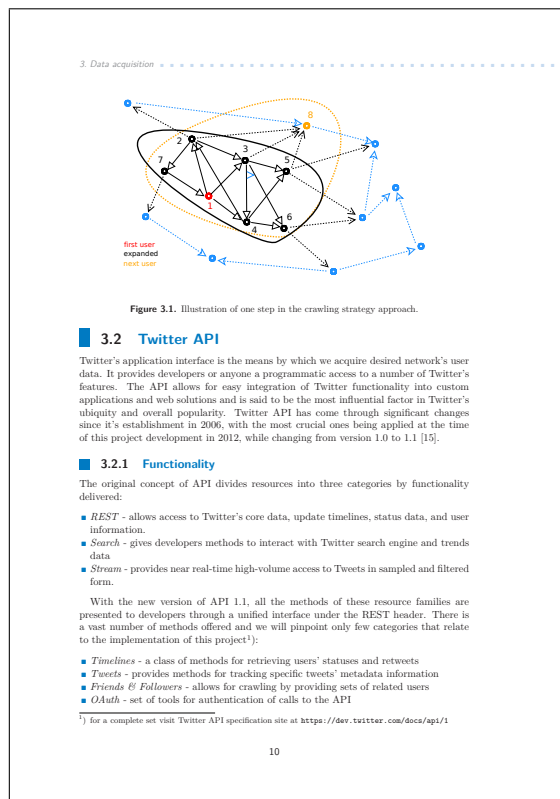


Figure 3.1. Illustration of one step in the crawling strategy approach.

## 3.2 Twitter API

Twitter's application interface is the means by which we acquire desired network's user data. It provides developers or anyone a programmatic access to a number of Twitter's features. The API allows for easy integration of Twitter functionality into custom applications and web solutions and is said to be the most influential factor in Twitter's ubiquity and overall popularity. Twitter API has come through significant changes since its establishment in 2006, with the most crucial ones being applied at the time of this project development in 2012, while changing from version 1.0 to 1.1 [15].

### 3.2.1 Functionality

The original concept of API divides resources into three categories by functionality delivered:

- **REST** - allows access to Twitter's core data, update timelines, status data, and user information.
- **Search** - gives developers methods to interact with Twitter search engine and trends data
- **Stream** - provides near real-time high-volume access to Tweets in sampled and filtered form.

With the new version of API 1.1, all the methods of these resource families are presented to developers through a unified interface under the REST header. There is a vast number of methods offered and we will pinpoint only few categories that relate to the implementation of this project<sup>1)</sup>:

- **Timelines** - a class of methods for retrieving users' statuses and retweets
- **Tweets** - provides methods for tracking specific tweets' metadata information
- **Friends & Followers** - allows for crawling by providing sets of related users
- **OAuth** - set of tools for authentication of calls to the API

<sup>1)</sup> for a complete set visit Twitter API specification site at <https://dev.twitter.com/docs/api/1>

**Fig. 4.** The CTUstyle common page

This thesis by G. Šourek is fully available at [9].

`tex.sx` [8]. And he accepted the proposal (with financial support by Prof. Hlaváč from CTU). This is another story, described in the previous article ...

## References

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