

How to Write an Excellent Excel@FIT Paper

Adam Herout*



Abstract

What is the problem? What is the topic?, the aim of this paper? Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce ullamcorper suscipit euismod. Mauris sed lectus non massa molestie congue. In hac habitasse platea dictumst. How is the problem solved, the aim achieved (methodology)? Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce ullamcorper suscipit euismod. Mauris sed lectus non massa molestie congue. In hac habitasse platea dictumst. Curabitur massa neque, commodo posuere fringilla ut, cursus at dui. Nulla quis purus a justo pellentesque. What are the specific results? How well is the problem solved? Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce ullamcorper suscipit euismod. Mauris sed lectus non massa molestie congue. In hac habitasse platea dictumst. So what? How useful is this to Science and to the reader? Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce ullamcorper suscipit euismod.

Keywords: Keyword1 — Keyword2 — Keyword3

Supplementary Material: [Demonstration Video](#) — [Downloadable Code](#)

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1. Introduction

[Motivation] What is the raison d'être of your project? Why should anyone care? No general meaningless claims. Make bulletproof arguments for the importance of your work. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer sit amet neque vel mi sodales interdum nec a mi. Aliquam eget turpis venenatis, tincidunt purus eget, euismod neque. Nulla et porta tortor, id lobortis turpis. Sed scelerisque sem eget ante interdum, vel volutpat arcu volutpat.

[Problem definition] What exactly are you solving? What is the core and what is a bonus? What parameters should a proper solution of the problem have? Define the problem precisely and state how its solution should be evaluated. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Pellentesque non arcu quis nunc efficitur vestibulum. Integer gravida

neque suscipit diam porta aliquet. Maecenas porttitor libero ut turpis porttitor, auctor porta ligula rhoncus. Etiam a turpis blandit, eleifend dolor eget, egestas ligula. Nullam sollicitudin pulvinar mi sit amet interdum. Etiam in ultrices ante. Suspendisse potenti. Duis vel nisi eget tellus volutpat tempor. Etiam laoreet magna elit, et sollicitudin lectus tempor sit. Maecenas porttitor libero ut turpis porttitor, auctor porta ligula rhoncus. Etiam a turpis blandit, eleifend dolor eget, egestas ligula.

[Existing solutions] Discuss existing solutions, be fair in identifying their strengths and weaknesses. Cite important works from the field of your topic. Try to define well what is the *state of the art*. You can include a Section 2 titled "Background" or "Previous Works" and have the details there and make this paragraph short. Or, you can enlarge this paragraph to a

35 whole page. In many scientific papers, *this* is the most
 36 valuable part if it is written properly. Lorem ipsum
 37 dolor sit amet, consectetur adipiscing elit. Praesent
 38 congue enim eu eros dictum sagittis. Aliquam ligula
 39 arcu, gravida at augue et, aliquet condimentum nulla.
 40 Morbi a lectus arcu. Nam ac commodo nisi, a accum-
 41 san nunc. Nam sed ante vel nulla elementum lobortis.
 42 Aliquam sed laoreet risus. Etiam ipsum odio, gravida
 43 eget sapien dictum, eleifend aliquet ex. Duis dapibus
 44 vitae enim vitae bibendum. Phasellus eget pulvinar
 45 massa. Mauris ornare urna. Maecenas porttitor libero
 46 ut turpis porttitor, auctor porta ligula rhoncus. Etiam a
 47 turpis blandit, eleifend dolor eget, egestas ligula. Nul-
 48 lam sollicitudin pulvinar mi sit amet interdum. Etiam
 49 in ultrices ante. Suspendisse potenti. Duis vel nisi eget
 50 tellus volutpat tempor. Suspendisse potenti. Duis vel
 51 nisi eget tellus volutpat tempor.

52 **[Our solution]** Make a quick outline of your ap-
 53 proach – pitch your solution. The solution will be
 54 described later in detail, but give the reader a very
 55 quick overview now. Lorem ipsum dolor sit amet, con-
 56 sectetur adipiscing elit. Morbi laoreet risus a egestas
 57 imperdiet. Ut egestas nibh non fermentum vestibulum.
 58 Nullam quis eleifend ex, sed maximus nisl. Mauris
 59 maximus non dolor id tristique. Nunc pulvinar congue
 60 gravida. Nullam lobortis viverra leo sed commodo.
 61 Nulla in elit congue, ullamcorper metus non, eleifend
 62 risus. Vivamus porttitor, ex nec porttitor pretium,
 63 libero turpis ultrices dui, eu efficitur ante ipsum vel
 64 justo. Vivamus nec nulla nisi. Aenean quis mauris
 65 vitae metus gravida congue.

66 **[Contributions]** Sell your solution. Pinpoint your
 67 achievements. Be fair and objective. Lorem ipsum
 68 dolor sit amet, consectetur adipiscing elit. Integer sit
 69 amet neque vel mi sodales interdum nec a mi. Aliquam
 70 eget turpis venenatis, tincidunt purus eget, euismod
 71 neque. Nulla et porta tortor, id lobortis turpis. Sed
 72 scelerisque sem eget ante interdum, vel volutpat arcu
 73 volutpat. Aliquam cursus, dolor a luctus.

74 2. How To Use This Template

75 Here will go several sections describing **your work**.
 76 From theoretical background (Section 2), through your
 77 own methodology (Section 3), experiments and imple-
 78 mentation (Section 4 and possibly 5), to conclusions
 79 (Section 6). Instead of such technical content, here
 80 in this template we give a few hints how to write the
 81 paper.

82 Here is a list of actions to do first when you want
 83 to write an Excel@FIT paper:

84 1. Download all the template files (Sec. 2.1) into a
 85 directory. Maybe setup a GIT sync for backup,



Figure 1. Good writing is bad writing that was rewritten several times. Don't worry, start somewhere.


- sharing, and for use from multiple computers. 86
2. Rename *2019-ExcelFIT-ShortName.tex* – replace 87
 ShortName with something that identifies your 88
 work and is short enough. For example: *Vehicle-* 89
Boxes, *VanishingPoints*, *FastShadows*, *NewPro-* 90
beTesting, *CheapDynamicDNS*, ... This ensures 91
 that the filename already gives a hint what is in 92
 there (*mypaper.pdf* is really stupid). 93
3. Decide the language of your paper. English is 94
 recommended, as it is the language of science 95
 and technology. However, if you want to write 96
 in Czech or Slovak, you may. Use the correct 97
 option to the `\documentclass` command – the 98
 very first line of the template. The option may 99
 be either `[czech]` or `[slovak]`. 100
4. Insert meta information: **your name, e-mail,** 101
paper title. Make sure the year in the top right 102
 corner of the document is correct. Do not hes- 103
 itate to use `ěščžýáíé` in your name – the L^AT_EX 104
 template is configured to eat UTF8 Unicode. 105
5. Insert teaser images (“image abstract”). Use 106
 as many `\TeaserImage` commands as suitable 107
 – three or four will usually be fine for a one- 108
 line teaser. If you absolutely don't have any 109
 image showing your work (what kind of work 110
 could that be, anyway?!), remove the `\Teaser` 111
 command. 112
6. Insert references to supplementary material. That 113
 will typically be clickable links to a youtube / 114
 vimeo video and to downloadable code, hyper- 115
 link to an online demo, or a github repo. If you 116
 have anything else relevant, put it in. If there is 117
 no supplementary material (really?!), remove or 118
 comment out the `\Supplementary` command. 119
7. Keep calm and start writing (Figure 1). Some 120

121 suggestions how to do this are in Section 3.
 122 8. When your paper is accepted to Excel@FIT, un-
 123 comment `\ExcelFinalCopy` at the beginning of
 124 this file. The line numbers will disappear from
 125 the sides of the text and your paper is ready for
 126 final publication.

127 Jean-Luc Lebrun [1] offers excellent recommen-
 128 dations for the canonical sections of scientific/techni-
 129 cal papers. That is why Abstract, Introduction, and
 130 Conclusions in this template are already structured
 131 (remove the **[Bold labels]** in the Introduction and Con-
 132 clusions, they are there just for your information and
 133 should not remain in the paper). This structure is no
 134 more than a recommendation, but divert from it only
 135 in cases when you exactly know what you are doing.
 136 The “phony” texts (typeset in gray color) roughly in-
 137 dicate the lengths of individual parts of these sections.
 138 Replace them with reasonable amounts of text.

139 2.1 What Files are Here and Why

140 The template package for Excel@FIT papers contains
 141 these files:

142 **2020-ExcelFIT-ShortName.tex** This is the template
 143 for the main L^AT_EX file – this is your paper. Do
 144 yourself a favor and replace *ShortName* in the
 145 filename with something meaningful.
 146 **2020-ExcelFIT-ShortName-bib.bib** You can delete
 147 the contents of this file completely and start
 148 adding BibTeX references. It is much easier
 149 to use a small editing tool (Section 4, JabRef)
 150 than to format *.bib* file manually. Rename the
 151 file so that *ShortName* is consistent with the pre-
 152 vious file (and update the filename in the *.tex*
 153 file).
 154 **ExcelAtFIT.cls** L^AT_EX class file based on the *Stylish*
 155 *Article*¹ document class. Do not modify this file.
 156 **ExcelAtFIT-logo.pdf** This is the logo on the title page.
 157 **VUT-FIT-logo.pdf** Another logo on the title page.
 158 **images/placeholder.pdf** Placeholder image; include
 159 it, scale it as needed, then replace it with real
 160 content.

 161 **images/keep-calm.png** You don’t need this file; it
 162 is only used in this template to show how to
 163 include a *.png* file (Figure 1).
 164

¹<http://www.latextemplates.com/template/stylish-article>

3. How To Write the Paper — A Few Hints 165

A reasonable way to start writing is sketching the **ab-**
stract [2]. Writing the abstract helps focus on what
 is important in the paper, what is the contribution, the
 meaning for the community. This exercise might take
 some 20 minutes and it pays back by clearing the key
 points of the text. In 99 % cases it is very reasonable
 to stick to the abstract structure [1] which is provided
 in this template.

Once you have the abstract, it should be very clear
 what is the message of the paper, what is the newly
 introduced knowledge, what are the proofs of its contri-
 bution, etc. This is the right time to start constructing
 the *skeleton* of the paper: its **comics edition** [3]. This
 thing is composed of mainly four items:

1. **Sections and subsections.** 180
2. **Figures and tables.** At this phase, knowing
 that “once there will be a figure about this and
 that” is just fine. That is why we have the *place-*
holder.pdf image – see Figure 2. If this totally
 generic image can be replaced by some tempo-
 rary image which still needs more work, but
 which is closer to the target version, go ahead.
 A hand-drawing photographed by a cellphone is
 perfect at this stage. 189
3. **Todo’s.** In the early comics version, every sec-
 tion is filled by one or more `\todo` commands
 and nothing else. A todo in the text might look
 like: **[[you should do something]]**. Unlike some
 elaborated todo packages, this simple solution
 (defined in the template) does not break the page
 formatting and it is perfectly sufficient. 196
4. **Phony placeholder texts.** These help you esti-
 mate the proportions of individual sections and
 subsections and to better aim at the correct paper
 length. Use `\blind{3}` to get three paragraphs
 of beautiful grey phony text. 201

One hour is usually enough for creating a nice comics
 edition of the paper. No reason to wait, make a copy
 of the template and start butchering it. 204

Having the comics edition usually lubricates the
 whole writing process. Now, the paper contains 20 or
 so todo’s – why not take the easiest one of them and
 replace it with a few lines of text within 15 minutes or
 even less. Writing is no more a scary complex work. 209

3.1 Images and Tables 210

Visuals (figures, tables, good equations, section head-
 ings) make the skeleton of a properly written paper.
 A time-stressed reader should be able to get the idea
 from only browsing them. Therefore: 214

1. **Make them perfect.** Cheap and ugly images – cheap and ugly paper. Imperfect or shorter text – who cares?
2. **Make them self-contained.** Be not afraid to have a ten-lines-long caption under an image. The image plus its caption must make perfect sense by themselves, without reading the text.
3. **Make them many.** EVERY technical idea is better explained by an image. Two images per page are a moderate start.

4. Some Useful Tools

This list is not a list and it is by no means complete. If you prefer other tools – cool, stick with them. If you are just beginning, consider these.

Overleaf Online L^AT_EX editing – if you don’t want to install and learn many tools, Overleaf is a great solution: works online and allows sharing your text with your supervisor. Unless there are very good reasons for not doing so, stick to Overleaf. Share your Overleaf project with your supervisor and they can help you writing and polishing the paper online.

MikTeX Problem-free L^AT_EX for Windows; a distribu- 280
tion with perfect automation of package down- 281
load. Single setup, no more worries. 282

TeXstudio Portable and opensource GUI for \LaTeX writing. Ctrl+click jumps from pdf to latex and back. Integrated spellchecker, syntax highlighting, multifile projects, etc. First, install MikTeX, then TeXstudio. Ten minutes and you are a \LaTeX master.

JabRef	Nice and simple Java program for managing	289
	<i>.bib</i> files with references. Not much to learn –	290
	one window, a straightforward form for editing	291
	the entries.	292

InkScape Opensource and portable editor of vector files (SVG and – conveniently – PDF). The proper tool for making great drawings for papers – not the easiest to learn, though.

GIT Great for team collaboration on L^AT_EX projects, 297
but also helpful to a single author – for version- 298
ing, backup, multi-computer, . . . 299

5. Frequently Used L^AT_EX Fragments

Here goes an example of a table:

Table 1. Table of Grades

Name		
First name	Last Name	Grade
John	Doe	7.5
Richard	Miles	2

Figure 2 shows a wide figure, Figure 1 is a single-column figure with width specified relatively to the

L^AT_EX lets you easily insert both vector and raster graphics. It is reasonable to use three formats:

.pdf Perfect for vector graphics. All graphs **must** be in vector and therefore in .pdf. Gnuplot, pyplot, Matlab – they all produce vector charts in .pdf easily. Diagrams, system structures, sketches – all vector graphics. It’s 2020, not 1980 anymore...

.jpg Suitable for photos. **Never** for plots or screenshots.

- **.png** Good for precise raster graphics. Screenshots, raster plots, raster outputs of programs. Not for diagrams and plots – unless it is a one-in-ten-years exception.

Caption of a table goes **before** the table (e.g. Table 1), just the opposite way than with figures. Don't look for the logic behind, just take it as it is.

3.2 Sections and Subsections

It is usually wrong to have subsections in the Introduction; it is always wrong to have them in Conclusions. In this kind of paper, it is very likely to be wrong to have any subsubsections.

Section headings are the skeleton of the paper – make them accurate and descriptive. One-word section titles (apart from Introduction and Conclusions) are typically wrong, because they are not descriptive. “Proposed Method for Running X by Using Y” is better than “The Method”. “Implemented Application for PQR Communication” is better than “Application”. The outline of all section titles should contain all the keywords relevant for the work. Just by seeing them, the reader should be able to tell precisely the topic of the paper. If not, the section headers are wrong (usually too short and generic).

3.3 Keywords

Keywords are specified at the top of the document.

1. When making the list of keywords, ask yourself this: “What should one write to google, so that the right answer would be my paper?”

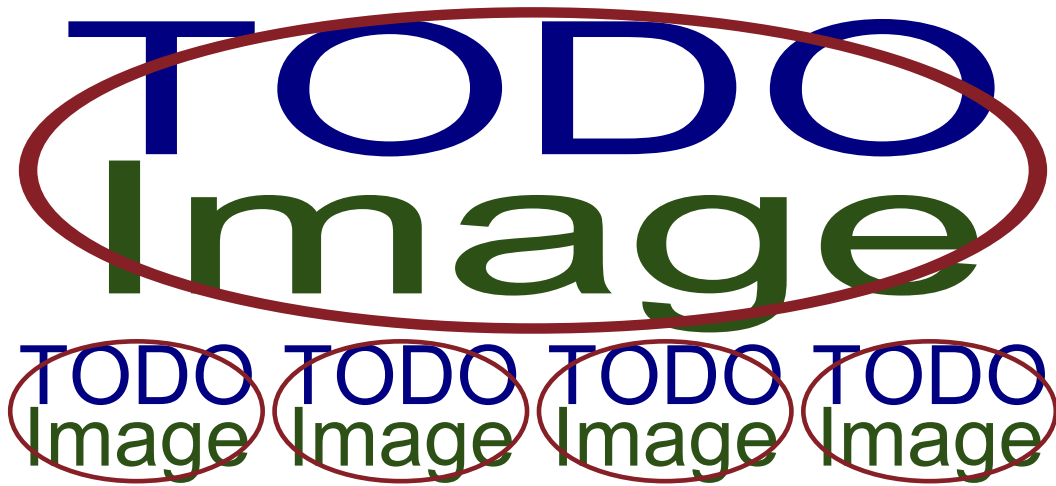


Figure 2. Wide Picture. The whole figure can be composed of several smaller images. If you want to address individual images in the caption or from the text, use the *subcaption* package.

column. Some mathematics $\cos \pi = -1$ and α in the text².

Now, this is an equation:

$$\cos^3 \theta = \frac{1}{4} \cos \theta + \frac{3}{4} \cos 3\theta \quad (1)$$

and here is a bunch of equations aligned horizontally:

$$3x = 6y + 12 \quad (2)$$

$$x = 2y + 4 \quad (3)$$

In programming, longer and more descriptive identifiers are better:

```
volume = width * height * length
if volume > volume_max:
    print "That's too much material!"
```

but the same is **wrong** in mathematical writing and in papers and single-letter identifiers are to be used:

$$V = w \times h \times l, \quad (4)$$

$$\delta(V) = V > \tau_V \quad (5)$$

identifiers composed of more than one letters are meaningful only in rare cases such as V_{\max} or t_{start} . Always! Apparently, you don't believe it and think you know better. Sorry, you don't. Always use single letter variables in equations. Oftentimes it makes sense to define one's own reasonable notation by using accents:

$$\bar{x} = \frac{\sum_{x_i \in X} x_i}{|X|}. \quad (6)$$

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no

²And some mathematics $\cos \pi = -1$ and α in a footnote.

information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

6. Conclusions

[Paper Summary] What was the paper about, then? What the reader needs to remember about it? Lorem ipsum dolor sit amet, consectetur adipiscing elit. Proin vitae aliquet metus. Sed pharetra vehicula sem ut varius. Aliquam molestie nulla et mauris suscipit, ut commodo nunc mollis.

[Highlights of Results] Exact numbers. Remind the reader that the paper matters. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed tempus fermentum ipsum at venenatis. Curabitur ultricies, mauris eu ullamcorper mattis, ligula purus dapibus mi, vel dapibus odio nulla et ex. Sed viverra cursus mattis. Suspendisse ornare semper condimentum. Interdum et malesuada fames ac ante ipsum.

[Paper Contributions] What is the original contribution of this work? Two or three thoughts that one should definitely take home. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Praesent posuere mattis ante at imperdiet. Cras id tincidunt purus. Aliquam erat volutpat. Morbi non gravida nisi, non iaculis tortor. Quisque at fringilla neque.

[Future Work] How can other researchers / developers make use of the results of this work? Do you have further plans with this work? Or anybody else? Lorem ipsum dolor sit amet, consectetur adipiscing

elit. Suspendisse sollicitudin posuere massa, non con- 359
360 vallis purus ultricies sit amet. Duis at nisl tincidunt,
361 maximus risus a, aliquet massa. Vestibulum libero
362 odio, condimentum ut ex non, eleifend.

363 Acknowledgements

364 I would like to thank my supervisor X. Y. for his help.

365 References

- 366 [1] Jean-Luc Lebrun. *Scientific Writing 2.0: a reader* 359
367 *and writer's guide*. World Scientific Publishing,
368 2011. ISBN: 9814350605.
- 369 [2] Adam Herout. Jak psát abstrakt. blogpost (czech),
370 Dec 2013. [http://www.herout.net/
blog/2013/12/jak-psat-abstrakt/](http://www.herout.net/blog/2013/12/jak-psat-abstrakt/). 371
- [3] Adam Herout. Diplomka / comics edi- 372
tion. blogpost (czech), March 2013. 373
[http://www.herout.net/blog/2013/
03/diplomka-comics-edition/](http://www.herout.net/blog/2013/03/diplomka-comics-edition/). 374
375