

How to Write an Excellent Excel@FIT Paper

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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 *2021-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 hesi- 103
 tate to use `ěščřžýáíé` in your name – the \LaTeX 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 **2021-ExcelFIT-ShortName.tex** This is the template
 143 for the main \LaTeX file – this is your paper. Do
 144 yourself a favor and replace *ShortName* in the
 145 filename with something meaningful.

146 **2021-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** \LaTeX 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>

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. 181–189
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 so-
 lution (defined in the template) does not break
 the page formatting and it is perfectly sufficient. 190–196
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. 197–201

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.

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.

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:

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

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

- 227 **.pdf** Perfect for vector graphics. All graphs **must** be
 228 in vector and therefore in .pdf. Gnuplot, pyplot,
 229 Matlab – they all produce vector charts in .pdf
 230 easily. Diagrams, system structures, sketches
 231 – all vector graphics. It’s 2020, not 1980 any-
 232 more. . .
 233 **.jpg** Suitable for photos. **Never** for plots or screen-
 234 shots.
 235 **.png** Good for precise raster graphics. Screenshots,
 236 raster plots, raster outputs of programs. Not for
 237 diagrams and plots – unless it is a one-in-ten-
 238 years exception.

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

242 3.2 Sections and Subsections

243 It is usually wrong to have subsections in the Introduc-
 244 tion; it is always wrong to have them in Conclusions.
 245 In this kind of paper, it is very likely to be wrong to
 246 have any subsections.

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

259 3.3 Keywords

260 Keywords are specified at the top of the document.

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

2. Very generic terms (“IT”, “Graphics”, “Hard-
 264 ware”) are useless. Narrow terms are fine (“Ma-
 265 trix Code Recognition”, “Appearance-Based Ve-
 266 hicle Segmentation”, . . .) 267

4. Some Useful Tools 268

This list is not a list and it is by no means complete. If
 269 you prefer other tools – cool, stick with them. If you
 270 are just beginning, consider these. 271

Overleaf Online **L^AT_EX** editing – if you don’t want
 272 to install and learn many tools, Overleaf is a
 273 great solution: works online and allows sharing
 274 your text with your supervisor. Unless there
 275 are very good reasons for not doing so, stick to
 276 Overleaf. Share your Overleaf project with your
 277 supervisor and they can help you writing and
 278 polishing the paper online. 279

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 **L^AT_EX**
 283 writing. Ctrl+click jumps from pdf to latex and
 284 back. Integrated spellchecker, syntax highlight-
 285 ing, multifile projects, etc. First, install Mik-
 286 TeX, then TeXstudio. Ten minutes and you are
 287 a **L^AT_EX** master. 288

JabRef Nice and simple Java program for managing
 289 *.bib* 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
 293 files (SVG and – conveniently – PDF). The
 294 proper tool for making great drawings for pa-
 295 pers – not the easiest to learn, though. 296

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 300

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-
 301 column figure with width specified relatively to the 302
 303



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.

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

306 Now, this is an equation:

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

307 and here is a bunch of equations aligned horizontally:

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

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

308 In programming, longer and more descriptive identifiers are better:
309

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

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

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

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

315 identifiers composed of more than one letters are meaningful only in rare cases such as V_{\max} or t_{start} . Always!
316 Apparently, you don't believe it and think you know
317 better. Sorry, you don't. Always use single letter variables in equations. Oftentimes it makes sense to define
318 one's own reasonable notation by using accents:
320

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

321 Hello, here is some text without a meaning. This
322 text should show what a printed text will look like
323 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
324 a difference between this text and some nonsense like
325 "Huardest gefburn"? Kjift – not at all! A blind text like
326 this gives you information about the selected font, how
327 the letters are written and an impression of the look.
328 This text should contain all letters of the alphabet and
329 it should be written in of the original language. There
330 is no need for special content, but the length of words
331 should match the language.
332

6. Conclusions

333

[Paper Summary] What was the paper about, then?
334 What the reader needs to remember about it? Lorem
335 ipsum dolor sit amet, consectetur adipiscing elit. Proin
336 vitae aliquet metus. Sed pharetra vehicula sem ut var-
337 ius. Aliquam molestie nulla et mauris suscipit, ut
338 commodo nunc mollis.
339

[Highlights of Results] Exact numbers. Remind
340 the reader that the paper matters. Lorem ipsum do-
341 lor sit amet, consectetur adipiscing elit. Sed tempus
342 fermentum ipsum at venenatis. Curabitur ultricies,
343 mauris eu ullamcorper mattis, ligula purus dapibus mi,
344 vel dapibus odio nulla et ex. Sed viverra cursus mattis.
345 Suspendisse ornare semper condimentum. Interdum et
346 malesuada fames ac ante ipsum.
347

[Paper Contributions] What is the original con-
348 tribution of this work? Two or three thoughts that one
349 should definitely take home. Lorem ipsum dolor sit
350 amet, consectetur adipiscing elit. Praesent posuere
351 mattis ante at imperdiet. Cras id tincidunt purus. Ali-
352 quam erat volutpat. Morbi non gravida nisi, non iaculis
353 tortor. Quisque at fringilla neque.
354

[Future Work] How can other researchers / devel-
355 opers make use of the results of this work? Do you
356 have further plans with this work? Or anybody else?
357 Lorem ipsum dolor sit amet, consectetur adipiscing
358

359 elit. Suspendisse sollicitudin posuere massa, non con-
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*
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/
371 blog/2013/12/jak-psat-abstrakt/](http://www.herout.net/blog/2013/12/jak-psat-abstrakt/).
- 372 [3] Adam Herout. Diplomka / comics edi-
373 tion. blogpost (czech), March 2013.
374 [http://www.herout.net/blog/2013/
375 03/diplomka-comics-edition/](http://www.herout.net/blog/2013/03/diplomka-comics-edition/).