Beautiful PDF documents with web technologies

We tend to prefer mark-up languages (Markdown, LaTeX, etc.) to interfaced document editors like MS Office or Google Docs, because they make it easier to quickly write documents with consistent style. However, Markdown is limited to the title/sections/paragraphs structure, and LaTeX has obscure syntax and errors that also make it difficult to go off the beaten tracks. This report introduces ReLaXed, a solution using Pug and SCSS for document definition and Google Chrome for rendering.

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Web technologies have never looked so good

Plenty of CSS frameworks will make sure your documents will look clean and modern. Javascript frameworks can plot schemas, highlight code, or render maths equations the same way LaTeX does. Millions of people (and growing) are now fluent in these technologies. Shorthand languages like Pug and SCSS are finally making it fun to write HTML and CSS. (Headless) web browsers can easily turn all these technologies into PDF, on any platform.

As an illustration, it took just one line to import the Semantic UI framework and style this document. Now look at this gorgeous table (don't pay attention to the content, it's place-holder)

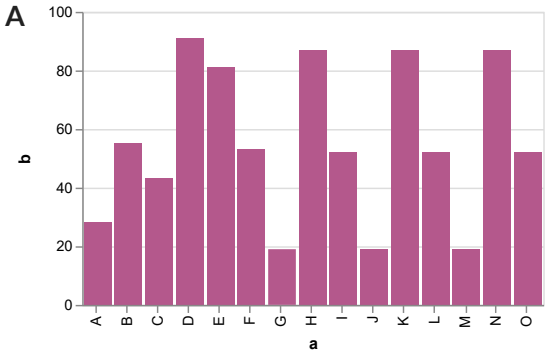
Feature	Framework	Notes
Mathematical equations	MathJax	✔ Totally working
Plots	Vegalite	Needs testing
Simple installation	NPM	✖ Problematic
Flowcharts	Mermaid.js	✔ Beautifully working

Table 1: There is not much to say about this table but hey this is a caption. Captions are cool.

Here is another cool component provided by Semantic UI:

Give it a try !

The ReLaXed homepage is at github.com/RelaxedJS/ReLaXed



B

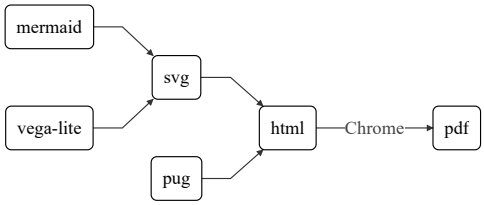


Figure 1: Examples of graphics generated by web frameworks. This also demonstrates figure composition into panels - suck it, markdown ! **A.** Graph defined as a JSON and transformed to SVG using Vega-lite and Chrome. **B.** Graph generated using Mermaid and Chrome.

Next we will have a look at some differences between ReLaXed and other frameworks.

ReLaXed vs other solutions

Here are a few highlights of what you may win, or lose, using ReLaXed instead of another solution. This section is of course open to contributions.

Let us start with Markdown. This widely supported language (Github, NPM, etc.) became very popular due to its simple and friendly syntax close to plain text. Markdown also has cool editors and extensions. One example is `markdown-preview-enhanced` which can render plots, flowcharts, and equations.

ReLaXed has been specially extended so that it could support plot, flowchart, and equations (using the same underlying libraries as markdown-preview-enhanced), as illustrated in Figure 1. In addition, ReLaXed allows you to write any kind of layout with boxes, sidebars, etc. HTML elements are more fun to write with Pug (in markdown, HTML elements must be written in plain HTML). You can define macros, use conditionals and loops, use computed expressions using Javascript , and ReLaXed supports (S)CSS which is pretty cool. Last but not least, you can write parts in markdown if you want to 😉 . Yep, that was an emoji. Cost us one line of code, to import Emoji CSS as a stylesheet.

Now what about LaTeX ? Sure, LaTeX is wide-spread in academic and publishing communities, where it's typography and layout optimizations, and its bibliography management tool are very appreciated. But LaTeX is also known for its cryptic errors, its complex advanced syntax which not many make the effort to learn, and as a consequence not many LaTeX venture on the creative side with their own themes and layouts.

Certainly the letter and paragraph spacings won't be as nice in ReLaXed (but Google Chrome is still doing a very good job), but the syntax, clear error messages, etc. will certainly make you happier. ReLaXed is also possibly faster to render big documents (not entirely sure though 🤔).

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