Nobby

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Convenience. . .

. . . always wins. Writing technical articles in LaTeX, keeping them under version control, and editing them in your favourite editor is convenient, whereas editing code in a browser, writing technical articles in HTML, or keeping Wordpress under version control is not; at least not for me. And converting LaTeXcode to HTML is inconvenient . . . on a good day.

Nobby and *Nobby2WP* are my tools to get that convenience. *Nobby* converts LaTeXarticles to HTML and *Nobby2WP* uploads them to a Wordpress server. Needless to say I wrote this entire post in LaTeX, used *Nobby* for the HTML conversion, and published it with *Nobby2WP* on this very page. Feel free to inspect the source code for this post or read it in PDF form.

Disclaimer: when it comes to LaTeX→ HTML converters no one size fits all. Consider this post a demonstration of *Nobby's* abilities to help you decide if it may be for you. If not, here are some alternatives you may want to consider: latex2wp, Lyx2Wordpress, latex2html, PlasTeX and SnuggleTeX.

For more information about Nobby visit its GitHub page or read the documentation.

Note: This article does not cover *Nobby2WP*. See project description for a brief example instead.

1 Formatting

Here is Pythagoras' theorem in an *align* environment:

$$z = \sqrt{x^2 + y^2}. \tag{1}$$

Here it is again as an inline formula: $z = \sqrt{x^2 + y^2}$.

Nobby automatically escapes the ¡¿ characters. You may therefore write ¡strong¿ or ¡/strong¿ without accidentally inserting HTML tags. Furthermore, Nobby

translate quotation characters (eg “text in quotes”) and escaped LaTeXsymbols like “$”, “{“, “}” and “%” to proper HTML, ie without the leading backslash.

You can, of course, *emphasise* something or make a **bold** statement by using the standard LaTeX`\emph` and `\textbf` commands.

Inline math expressions like $x = 1$ or $e^{i\pi} + 1 = 0$ work fine too.

You can also force Nobby to render normal text via LaTeXby putting it into double braces: This is actually an SVG image.

Many LaTeXmacros have equivalents in HTML, for instance `\ldots`. Nobby features a plugin system to control the macro conversion. For instance, there is already a plugin for `\ldots` so you can already use it... no need to write it yourself.

Likewise, some LaTeXfonts have HTML equivalents as well. Since font changes in LaTeXare also only macros Nobby's plugin system already covers them too, for instance to produce the `typewriter font`.

1.1 Environments

Nobby knows how to recognise LaTeXmacros and environments, but not what they mean. Whenever it finds a macro or environment it looks for an associated plugin. If no such plugin exists then it passes the code verbatim to LaTeXand inserts the result as an image into the HTML page.

In this section I will demonstrate some of the default plugins for frequently used environments.

1.1.1 Itemize

- Item 1
- Item 2

1.1.2 Enumerate

1. Item 1
2. Item 2

1.1.3 Equation

$$E = mc^2. \tag{2}$$

1.1.4 Theorem Environments

The AMS package provides a way to define theorem environments with `\newtheorem{theorem}{Theorem}`. Nobby assumes that "lemma", "theorem", "example", "corollary" and "definition" are defined in the document preamble. The HTML conversion will fail if not.

Nobby ships with a single plugin to handle all theorem environments. Here are some examples.

Here is a theorem from Wikipedia (compare Nobby's and Wikipedia's version in terms of quality!).

Theorem 1 (Divergence Theorem)**.** *Suppose $\mathcal{V}$ is a subset of $\mathbb{R}^n$ (in the case of $n = 3$, $\mathcal{V}$ represents a volume in 3D space) which is compact and has a piece wise smooth boundary $\mathcal{S}$ (also indicated with $\partial\mathcal{V} = \mathcal{S}$). If F is a continuously differentiable vector field defined on a neighbourhood of $\mathcal{V}$, then we have*

$$\iiint_{\mathcal{V}} \nabla \cdot F(\mathbf{v})\, \mathrm{d}\mathbf{v} = \oint_{\mathcal{S}} F(\mathbf{s})\, \mathrm{d}\mathbf{s}. \tag{3}$$

A definition from Wikipedia:

Definition 1 (Divergence in Cartesian Coordinates)**.** *Let x, y, z be a system of Cartesian coordinates in 3-dimensional Euclidean space, and let i, j, k be the corresponding basis of unit vectors. The divergence of a continuously differentiable vector field $F = Ui + Vj + Wk$ is equal to the scalar-valued function:*

$$\operatorname{div} F = \nabla \cdot F = \frac{\partial U}{\partial x} + \frac{\partial V}{\partial y} + \frac{\partial W}{\partial z}. \tag{4}$$

Here is yet another definition from Wikipedia to demonstrate the continuous enumeration of environments and equations. Note that the definition references its own equations (the original is again from Wikipedia).

Definition 2 (Laplace Operator)**.** *The Laplace operator is a second order differential operator in the n-dimensional Euclidean space, defined as the divergence $(\nabla\cdot)$ of the gradient (∇f). Thus if f is a twice-differentiable real-valued function, then the Laplacian of f is defined by*

$$\Delta f = \nabla^2 f = \nabla \cdot \nabla f \tag{5}$$

where the latter notations derive from formally writing $\nabla = \left(\frac{\partial}{\partial x_1}, \ldots, \frac{\partial}{\partial x_n}\right)$. Equivalently, the Laplacian of f is the sum of all the unmixed second partial derivatives in the Cartesian coordinates

$$\Delta f = \sum_{i=1}^{n} \frac{\partial^2 f}{\partial x_i^2} \tag{6}$$

As a second-order differential operator, the Laplace operator maps C^k-functions to C^{k-2}-functions for $k \geq 2$. The expression (5) (or equivalently (6)) defines an

operator $\Delta : C^k(\mathbb{R}^n) \mapsto C^{k-2}(\mathbb{R}^n)$*, or more generally an operator* $\Delta : C^k(\Omega) \mapsto C^{k-2}(\Omega)$ *for any open set* Ω*.*

You can reference Theorem 1, Definition 1 and Definition 2 with the usual `\ref` macro. Alternatively, you may also reference them with the `\hyperref` macro and link directly to the Divergence Theorem, the Definition of Divergence, or the Definition of the Laplacian.

Theorem 2. *There is no largest integer.*

Proof. Suppose there were a largest integer $n \in \mathbb{N}$. Then it must be true that $n > n'$ for all $n' \in \mathbb{N} \setminus \{n\}$. However, the choice $n' = n + 1$ is also an integer and larger than n. This contradicts the assumption that n is the largest integer. □

1.2 Comments

Nobby also converts LaTeXcomments to HTML. You cannot see those comments because, well, they are comments, alright. To see them anyway switch to the source code view in your browser.

2 Referencing

Nobby supports references via the standard `\href` command. This works for equations, sections, tables, figures, and more.

For instance, here is a numbered reference to Pythagoras' theorem (1) and Einstein's famous formula (2).

You may also use the `\hyperref` command to create named links to reference the formulae of Pythagoras and Einstein.

Next are some examples of referenced sections.

2.1 Sub-Section

This is sub-Section 2.1 inside Section 2.

2.1.1 Sub-Sub-Section

This is sub-sub-Section 2.1.1 inside sub-Section 2.1 and Section 2. The `\hyperref` also works. For instance, you can link to the main section.

	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{2}$	π
$\sin(\phi)$	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	1	0
$\cos(\phi)$	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	0	-1

Table 1: Floating table

(a) A gull (b) A tiger (c) A mouse

Figure 1: Pictures of animals

Starred Sub-Sub-Section

Nobby also supports starred sections.

3 Figures and Tables

Here is a floating table. LaTeXwould put it at a visually pleasing position whereas Nobby puts it right where it was defined.

Next is a figure environment that uses the `\subcaption` package. The code for this example is from the Wikimedia on LaTeX. Note that the image is a PNG (hence the coarser appearance) because Nobby determined that it is too large to be included as an SVG. You can adjust the threshold where Nobby's switches from SVG to PNG images in `config.py` file or on the command line (see *nobby -h* for help).

Here is Figure 1a by itself. Note that the counter in the figure caption increased (as expected).

Figure 2: The gull by itself.

4 TikZ Image

TikZ is a popular LaTeXpackage for technical drawings. Here is an example from their webpage.