Adding LaTeX to improve flexibility

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Overview

In this example, we provide some simple examples of how the strengths of Markdown and LaTeX can be used together to provide a higher level of control over manuscript formatting.

The focus for this example is image positioning, and text flow. The default method Pandoc uses to render images is to center them on the page, possibly placing the image on a new page below when sufficient space is not available. Often this results in the image appear *after* the location they are included in, making it difficult to precisely where they appear in the document flow.

Further, the basic version of Markdown used by Pandoc does not support any syntax for scaling images, so the images need to be pre-scaled before being included in the document.

There are several possible work-around to this problem including HTML-based and LaTeX-based approaches. The method I will describe below is one possible LaTeX-based solution.

LaTeX figure rendering

To improve our control over figure placement in Markdown documents, we will make use of two LaTeX packages:

- wrapfig
- framed

First, we will need to modify the YAML header at the top of our markdown document to indicate that these packages should be included.

To do this, we can use the `header-includes` option (see here for more examples).

```
---
header-includes:
   - \usepackage{wrapfig}
   - \usepackage{framed}
---
```

Positioning images with wrapfig

First, let's see how we can use `wrapfig` to align images to either side of a document and have text flow around them.

The basic syntax for using wrapfig is:

```
\begin{wrapfigure}{r}{0.5\textwidth}
  \begin{center}
    \includegraphics[width=0.5\textwidth]{filename}
  \end{center}
  \caption{figure caption}
\end{wrapfigure}
```

If you were to use only the above syntax for all of your figures, however, you would likely run into a problem when attempting to compile a PDF:

> ! Undefined control sequence.
>
> l.156 \includegraphics
>
> pandoc: Error producing PDF from TeX source

Pandoc appears to have trouble with `includegraphics` calls in documents for which there are no figures included using normal markdown syntax.

A work-around for this is to include a small (1x1px) transparent image using Markdown, and set its display to `none` using CSS:

```
<div style='display:none;'>
![](images/placeholder.png)
</div>
```

The image itself is still included, but is small enough to be missed (there is probably a pretty straight-forward way to hide it completely.) The CSS is needed to prevent an empty figure caption from being included and disrupting the ordering of figure numbers in the text.

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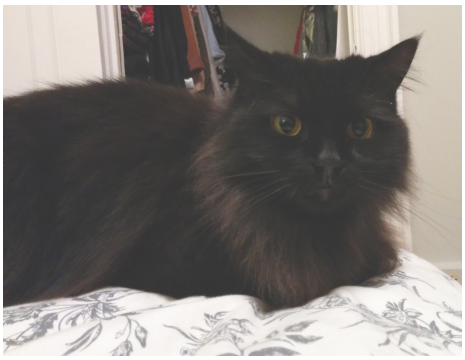

Figure 1: **Cat** Ponyo prefers to be on the right-side of the document.

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Adding a border using framed

Basic framed usage

We may also wish to include a border around our images. To do this, we can used the LaTeX `framed` package.

For this, we simply wrap our `\includegraphics` call with:

```
\begin{framed}
...
\end{framed}
```

The resulting code to include our figure becomes:

```
\begin{wrapfigure}[28]{l}{0.5\textwidth}
\begin{framed}
  \begin{center}
    \includegraphics{images/ponyo}
  \end{center}
  \caption{\textbf{Cat} For now, she will settle for being on the left...
  }
\end{framed}
\end{wrapfigure}
```

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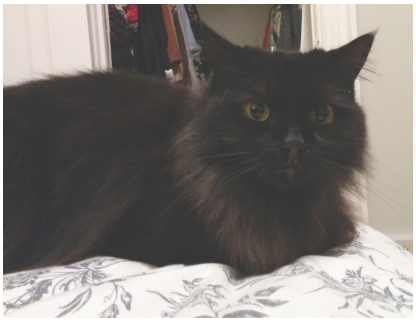

Figure 2: **Cat** For now, she will settle for being on the left...

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Getting rid of extra spacing

To reduce some of the wasted space above and below the figure, we can use the `\vspace` command:

```
\begin{wrapfigure}{l}{0.5\textwidth}
\begin{framed}
  \vspace{-18pt}
  \begin{center}
    \includegraphics{images/ponyo}
  \end{center}
  \vspace{-20pt}
  \caption{\textbf{Cat} Still hanging out on the left, but enjoying the more
  snug box.
  }
  \vspace{-8pt}
\end{framed}
\end{wrapfigure}
```

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Figure 3: **Cat** For now, she will settle for being on the left...

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Additional tips on working with images

Finally, here are a couple more tricks that I've found useful for improving the image handling in Markdown.

Reduce wasted space with \intextsep

Add this to the top of your document to cut back on some of the wasted space above and below your figures:

```
\setlength\intextsep{0pt}
```

Source: http://tex.stackexchange.com/questions/27695/strange-space-left-above-wrapfig-figures

Use \pagebreak to start a new page

Sometimes it is also useful to push some content down to the start of a new page. This can be useful, for example, if a block of code is rendering at the bottom of a page and is being split across two pages.

```
\pagebreak
```

Further Reading

1. Overleaf Package Example: wrapfig
2. ShareLaTeX - wrapfig
3. LaTeX Stack Exchange - Handling of wrapfig pictures in LaTeX
4. LaTeX/Boxes - Wikibooks