Beamer Slides using Pandoc and Markdown

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# 1 Introduction

## 1.1 Why and Why not

### 1.1.1 Why Markup Language?

* Separate “content” with “style”.

### 1.1.2 Why Pandoc and Beamer?

* For professional presentation.
* Tikz diagrams.
* Cross reference

## 1.2 A simple example intro.md

---  
title: Beamer Slides using Pandoc and Markdown  
author: Wai-Shing Luk  
bibliography: papers.bib  
...  
  
# Introduction {#sec:intro}  
  
## Why and Why not  
  
### Why Markup Language?  
  
- Separate "content" with "style".  
  
### Why Beamer?  
  
- For professional presentation.  
- Tikz diagrams.

# 2 pandoc

## 2.1 pandoc

Pandoc is a Haskell library for converting from one markup format to another[[1]](#footnote-25), and a command-line tool that uses this library. It can read Markdown and write  or Beamer.

To compile:

$ pandoc -s -t beamer beamer.yaml intro.md -o intro.tex

or directly to a pdf file:

$ pandoc -t beamer beamer.yaml intro.md -o intro.pdf

## 2.2 A simple header beamer.yaml

---  
fontsize: 10pt  
classoption:  
 - serif,onlymath  
institute: Fudan University  
date: \today  
link-citations: true  
colorlinks: true  
header-includes:  
 - \usetheme{default}  
 - \usepackage{tikz,pgf,pgfplots}  
 - \usetikzlibrary{arrows}  
 - \definecolor{qqqqff}{rgb}{0.,0.,1.}  
 - \newcommand{\columnsbegin}{\begin{columns}}  
 - \newcommand{\columnsend}{\end{columns}}  
 - \newcommand{\col}[1]{\column{#1}}  
 - \pgfdeclareimage[height=0.5cm]{fudan-logo}{fudan-logo.jpg}  
 - \logo{\pgfuseimage{fudan-logo}}  
...

## 2.3 Render Mathematical Equations using LaTeX

Consider the following problem:  
  
$$\begin{array}{ll}  
 \text{minimize} & f\_0(x), \\  
 \text{subject to} & F(x) \succeq 0,  
\end{array}$$ {#eq:semidef}  
  
- $F(x)$: a matrix-valued function  
- $A \succeq 0$ denotes $A$ is  
 positive semidefinite.

Consider the following problem:

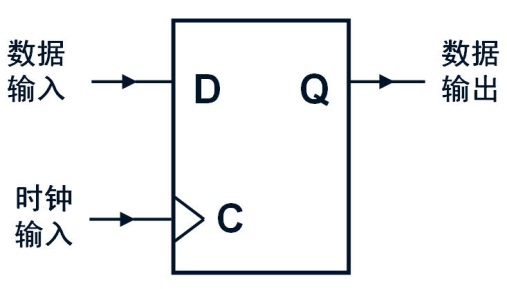
* : a matrix-valued function
* denotes is positive semidefinite.

## 2.4 How to make a two-column slide

\columnsbegin  
  
\col{0.5\textwidth}  
  
 Left-hand side  
  
\col{0.5\textwidth}  
  
 Right-hand side  
  
\columnsend

## 2.5 Figures

An image occurring by itself in a paragraph will be rendered as a figure with a caption.



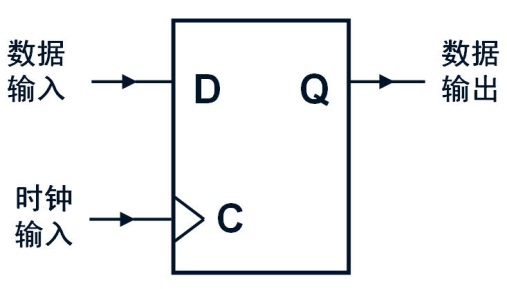
This is the caption

(source)

![This is the caption](media/image2.jpeg){#fig:figure0}

## 2.6 Figures (cont’d)

If you just want a regular inline image, just make sure it is not the only thing in the paragraph. One way to do this is to insert a nonbreaking space after the image:



(source)

![No caption](media/image2.jpeg)\

## 2.7 Render Diagrams using Tikz

\begin{figure}[hp]  
\centering  
\input{pole2polar.tikz}  
\caption{Example of constructing  
 the polar of a point}%  
\label{fig:pole2polar}  
\end{figure}

## 2.8 Table

Simple tables can be generated using Markdown.

| Costs | 28nm | 20nm |  
| ------------ | --------- | ----------- |  
| Fab Costs | 3B | 4B - 7B |  
| Process R&D | 1.2B | 2.1B - 3B |  
| Mask Costs | 2M - 3M | 5M - 8M |  
| Design Costs | 50M - 90M | 120M - 500M |  
  
: Fab, process, mask, and design  
 costs {#tbl:fab}

Fab, process, mask, and design costs

| Costs | 28nm | 20nm |
| --- | --- | --- |
| Fab Costs | 3B | 4B - 7B |
| Process R&D | 1.2B | 2.1B - 3B |
| Mask Costs | 2M - 3M | 5M - 8M |
| Design Costs | 50M - 90M | 120M - 500M |

# 3 pandoc-crossref filter

## 3.1 pandoc-crossref filter

With this filter, you can cross-reference figures (see Fig. [1](#fig:figure0) and Fig. ), display equations (see Eq. [1](#eq:semidef)), tables (see Table [1](#tbl:fab)) and sections § [1](#sec:intro), § [2.1](#sec:pandocx)

There is also support for code blocks, for example, Listing **¿lst:captionAttr?**, **¿lst:tableCaption?**.

To compile:

$ pandoc -F pandoc-crossref -t beamer beamer.yaml \  
 crossref.yaml beamer.md -o intro.pdf

## 3.2 A sample crossref.yaml

---  
cref: True  
codeBlockCaptions: True  
lofTitle: "## List of Figures"  
lotTitle: "## List of Tables"  
autoSectionLabels: True  
figureTemplate: $$t$$  
tableTemplate: $$t$$  
figPrefix:  
 - "Fig."  
eqnPrefix:  
 - "Eq."  
tblPrefix:  
 - "Table"  
lstPrefix:  
 - "Listing"  
secPrefix:  
 - "§"  
...

## 3.3 Code blocks

There are a couple options for code block labels. Those work only if code block id starts with lst:, e.g. {#lst:label}

## 3.4 caption attribute

caption attribute will be treated as code block caption. If code block has both id and caption attributes, it will be treated as numbered code block.

main :: IO ()  
main = putStrLn "Hello World!"

(source)

{#lst:captionAttr .haskell caption="Listing caption A"}

## 3.5 Table-style captions

Enabled with codeBlockCaptions metadata option. If code block is immediately adjacent to paragraph, starting with Listing: or :, said paragraph will be treated as code block caption.

Listing: Listing caption B

main :: IO ()  
main = putStrLn "Hello World!"

# 4 pandoc-citeproc filter

## 4.1 Bibliography

* See Aalst, Weijters, and Maruster ([2004](#ref-Aalst-etal_2004)), or
* See ([Baldi et al. 2008](#ref-Baldi-etal_2008); [Canfora and Cerulo 2005](#ref-Canfora-Cerulo_2005a)).

(source)

- See @Aalst-etal\_2004, or  
- See [@Baldi-etal\_2008;@Canfora-Cerulo\_2005a].

To compile:

$ pandoc -F pandoc-crossref --citeproc -t beamer \  
 beamer.yaml crossref.yaml beamer.md -o intro.pdf

## References

Aalst, W. van der, T. Weijters, and L. Maruster. 2004. “Workflow Mining: Discovering Process Models from Event Logs.” *IEEE Transactions on Knowledge and Data Engineering* 16 (9): 1128–42. <https://doi.org/10.1109/TKDE.2004.47>.

Baldi, Pierre F, Cristina V Lopes, Erik J Linstead, and Sushil K Bajracharya. 2008. “A Theory of Aspects as Latent Topics.” In *ACM Sigplan Notices*, 43:543–62. 10. ACM. <https://doi.org/10.1145/1449955.1449807>.

Canfora, G., and L. Cerulo. 2005. “Impact Analysis by Mining Software and Change Request Repositories.” In *11th IEEE International Software Metrics Symposium (METRICS’05)*, 29. Como, Italy: IEEE. <https://doi.org/10.1109/METRICS.2005.28>.

1. This is a footnote. [↑](#footnote-ref-25)