



使用 XIOPM 模板

Using \LaTeX to prepare slides

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Beamer for XIOPM presentations

If you would like \LaTeX in your presentation, Beamer is a great way to go!

- Beamer has a detailed [user manual](#), but we will go over the most common features.
- The most common of all slide types involve bulleted points, like these.
- Regular \LaTeX commands will help you type math, as below.

$$\mathcal{L}(\theta) = \log \sum_{k=1}^{|\mathcal{Z}|} Q(z_k | y) \frac{P(z_k, y | \theta)}{Q(z_k | y)} \geq \sum_{k=1}^{|\mathcal{Z}|} Q(z_k | y) \log \frac{P(z_k, y | \theta)}{Q(z_k | y)}$$



Slide Layouts

An overview of some different slide types you can have.





More with bullet points

Unrolling

- You could also unroll the slides in a sequence.



More with bullet points

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- Just added [`<+>`] option to `\begin{itemize}` in this frame.



More with bullet points

Unrolling

- You could also unroll the slides in a sequence.
- Just added [`<+>`] option to `\begin{itemize}` in this frame.
- P.S. If you end up using verbatim text (i.e. `\verb` command) as I did to typeset the bullet point above, make sure to add [`fragile`] option to your frame :)



More with bullet points

Global alerts

Sequential slide unrolling can be further enhanced using alerts.

- We will shortly show what they are.



More with bullet points

Global alerts

Sequential slide unrolling can be further enhanced using alerts.

- We will shortly show what they are.
- This is what they are :)



More with bullet points

Local alerts

Alerts can also be localized.

- The `\alert{}` command provides this functionality.
- Like this.
- You may as well choose the highlighting to stick.
 - Previous one did not, but this one will.
- Another common slide type involves columns and/or images.
 - We show them in the next slides.



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Images and columns

Adding images works like in normal \LaTeX :

Code for Adding Images

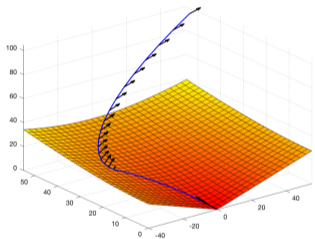
```
\usepackage{graphicx}
% ...
\includegraphics [width=\textwidth]
{source/background/XIOPM-5.jpg}
```

This slide layout was achieved using the `columns` feature. The number and widths of the columns is totally user preference. Another columns example follows on the next slide.





Another figures/columns example



Left: Solving for optimal fuel consumption **Right:** Solving for optimal time taken

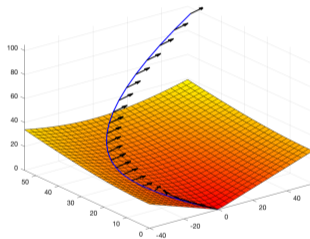


Figure: Minimum fuel trajectory

Figure: Minimum time trajectory



Blocks for theorems

Blocks are a great UI element and can be used for typesetting theorems.

Theorem

If $|\mathcal{H}| < \infty$, then \mathcal{H} is PAC Learnable.



Blocks for partitioning

Blocks are also a great way to partition your slide. They can be combined with columns, as shown here.

Standard Blocks

For the light theme, their title color and body color are different.

```
\begin{block}{title}
content...
\end{block}
```

Color Blocks

You can pick the color of blocks, but that will make the title and body color the same. Text will be blue (■ XIOPMblue) by default, but you may set it with an optional argument.

```
\begin{colorblock}[black]{uihteal}{title}
content...
\end{colorblock}
```




Side-Picture Slides

Just another layout you may want to use.

- These type of slides are created using `\begin{sidepic}{<image>}{<title>}`
- Otherwise, `sidepic` works just like `frame`





Pseudocode Example

Algorithm Running EM using the joint PMFs, P , Q , \hat{P}

Input: A belief network \mathcal{G} and dataset \mathcal{D}

Output: ML estimate of network parameter matrix \hat{P}

$\hat{P} \leftarrow \text{RANDOMPMF}()$

LogLikelihood \leftarrow empty list

$t \leftarrow 0$

repeat

 CurrentLogLikelihood $\leftarrow 0$

$Q \leftarrow 0$

for $d \in \mathcal{D}$ **do**

$\hat{P}(z_d | y_d) \leftarrow \hat{P}(z_d, y_d) \delta(y_d)$

 CurrentLogLikelihood \leftarrow CurrentLogLikelihood + SUM($\hat{P}(z_d | y_d)$)

$Q \leftarrow Q + \hat{P}(z_d | y_d) \times \delta(y_d)$

▷ E-step

end for

 LogLikelihood[t] = CurrentLogLikelihood

$\hat{P} \leftarrow \text{NORMALIZE}(Q)$

▷ M-step

$t \leftarrow t + 1$

until convergence

return \hat{P}



Personalization

Themes, fonts and colors





Let's talk themes

Three fundamental features greatly affect the look and feel of your slides. Two of them can be controlled with the `\themecolor` command.

- The background color.
 - The default is `light` theme, which has a light background, which we are currently using.
- The foreground color.
 - The `light` theme has a dark foreground (i.e. text color) and vice versa.
- The third, the footer color can be set using `\footlinecolor` command.
 - We are currently using ■■■■ `XIOPMblue` color for our footer.
 - The default is no footline, but I believe page numbers are incredibly helpful for your audience to ask questions later.



Let's talk themes

- I just called `\themecolor{dark}` before `\begin{frame}` for this slide.
 - Ideally you should set the theme globally in the preamble (i.e. before `\begin{document}`). Default is light.
 - If you switch the theme from light to dark or vice versa in the middle of the presentation (like we just did), you **may** have to follow up with `\usebeamercolor[fg]{normal text}` as well, as we did for this slide, otherwise the foreground color might not be automatically updated.
- You can also change the footer color with `\footlinecolor{color}`, as we did for this slide.
- All the changes we talked about here happen for the current **as well as subsequent** frames.
 - I will manually revert all the changes



Blocks in the dark theme

Standard Blocks

For the dark theme, their title color and body color are the same (sintefgrey).

```
\begin{block}{title}  
content...  
\end{block}
```

Color Blocks

Similar to the ones on the light theme, you pick the color of both text and background.

```
\begin{colorblock}[black]{uihteal}{title}  
content...  
\end{colorblock}
```



Fonts

- Fonts play a huge role in the look and feel of your presentation
 - Their main purpose however, is clarity!
- Serif vs Sans-Serif fonts
 - [This](#) is a good read on when to use which.
 - **Open Sans** and **IBM Plex Serif** have been provided with this template.
 - To conveniently switch from Open Sans to IBM Plex Serif, please use `\usefonttheme{serif}` in the preamble.
 - IBM Plex Serif is not available on pdfLaTeX, so Caladea will be used instead.
- The fonts provided in the fonts folder (or your own fonts) can only be used with XeLaTeX.
 - The Overleaf version of this template uses XeLaTeX by default.
 - Next few slides talk about font formats and how they work with different compilers.



Font formats over time

Here are the **old** formats (still used in the LaTeX ecosystem):

- *PostScript Type 1* format developed by Adobe in 1980s
 - Support officially ended by Adobe in January 2023
- *TrueType format* (.ttf) developed by Apple, also in 1980s, licensed to Microsoft

The **new** font formats are *OpenType*, developed jointly by Microsoft and Adobe in the 1990s as an extension of Apple's TrueType font format. *OpenType* fonts are either

- *PostScript flavor OpenType* (.otf) that supercedes Adobe's PostScript Type 1
- *TrueType flavor OpenType* (also .ttf!) that supercedes Apple's TrueType
 - Distinguishing them from the old TrueType format is therefore non trivial.



Font formats compatibility

The new *OpenType* fonts have several new features over the old formats. They are however, supported natively only by XeLaTeX and LuaLaTeX compilers. The most popular pdfLaTeX compiler has limited support for them:

- *OpenType* fonts are not pdfLaTeX-ready by default.
- They require the production of TeX font metrics and other ancillary files in order to be used with LaTeX.
- The production of these files is not easy for the average user.

Consequently, if using pdfLaTeX, the most convenient option is to restrict yourself to the fonts packages available at the [LaTeX Font Catalogue](#), which are already pdfLaTeX-ready.



Font formats compatibility

If you want to use fonts beyond those in the [LaTeX Font Catalogue](#) (for example, fonts from Google Fonts), the recommended approach is to use XeLaTeX.

- XeLaTeX is set as the default compiler on the Overleaf version of this template.
- The fonts included in the `fonts` folder are *TrueType flavor OpenType* fonts.
- You can still use pdfLaTeX, except that the included fonts will not be applied.



Text color

- Font color can be set with the `\textcolor{<color name>}{text}` command.
- The colors are defined in the `XIOPMcolor` package, mostly which are the same of uic presentation template:
 - The primary colors are the XIOPM logo's blue ( `XIOPMblue`) and red ( `XIOPMred`).
 - The secondary colors are Chicago Blue ( `chicagoblue`), UI Health Teal ( `uihteal`) and Champions Gold ( `championsgold`).
 - The neutral colors are Expo White ( `expowhite`), Steel Gray ( `steelgray` or  `steelgrey`) and `sintefgrey` ( `sintefgray` or  `sintefgrey`).
- A simpler alternative to font colors is often just `\emph{}`.



中文字体

- 模板中设置的正文字体为宋体
- 代码环境中使用微软雅黑



Chapter slides

- Allow you to partition your presentation into multiple chapters
- Also frames, but with a few more options
- Created with `\begin{chapter} [<image>] {<color>} {<title>}`
 - Image is optional, color and title are mandatory.
- Multiple background images have been provided in this template which may be used for chapter slides:
 - Some campus photos that I have taken over the years and;
 - some departmental logos.
 - Let's look at a few examples!



Title goes here

Subtitle goes here





Title goes here

Subtitle goes here





Thank you!