

L^AT_EX Course

Some Name Here

March 4, 2025

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1 Introduction

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2 Normal Text

2.1 Level 2

2.1.1 Level 3

This is a paragraph. This is in the same paragraph. This is still in the same paragraph.
This is another paragraph, however.

- It is possible to *italicize* text with `\emph{}`.
- It is possible to **boldface** text with `\textbf{}`.
- It is possible **to *nest* these** effects.

If you wish to write an entire paragraph, you may write everything on one line. With line-wrapping, this becomes trivial, as it even looks like paragraph. However, for the love of God, do not do this, as it is impossible to debug, should some of your inline things be weird. In addition, version-control systems like git are much more powerful when you use more lines.

2.2 Lists

1. First
 2. Second
 3. Third
 - (a) Nesting
 - (b) Is
 - (c) Nice
 - You can
- LaTeX Even
- * Do
- This

3 Math

3.1 Equation

This is an equation

$$\langle f, g \rangle_{[a,b]} = \int_a^b f(x) \overline{g(x)} dx \tag{1}$$

3.2 Gather

This is the gather environment

$$E = mc^2$$
$$E^2 = \frac{mc^2}{\sqrt{1 - \frac{v^2}{c^2}}}$$

3.3 Align

This is an *anonymous* align environment

$$\begin{aligned} 24 &= 8 \cdot 3 \\ &= 4 \cdot 6 \\ &= 2 \cdot 2 \cdot 2 \cdot 3 \end{aligned}$$

3.4 Inlined math

A \sum_n^k sum! And a $\frac{1}{n}$.
You can also:

$$\alpha$$

do this.

3.5 Some symbols

Greek

$$\begin{aligned} &\psi, \Psi \\ &\alpha, \beta, \gamma, \delta \\ &\Gamma, \Delta \\ &\epsilon, \varepsilon \end{aligned}$$

Other things

$$\begin{aligned} &\nabla, \partial \\ &\int, \iint, \oint \\ &\sum_{i=1}^n, \prod_{1 \leq i \leq n} \\ &\frac{a+ib}{c+id}, i=1, \dots, n \\ &\bar{x}, \vec{x}, x^\circ \end{aligned}$$

Matrices (and vectors)

$$\begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}, \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}, \left\{ \begin{matrix} 1 & 2 \\ 4 & \int_0^1 x^2 dx & 6 \\ 7 & 8 & 9 \end{matrix} \right\}, \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix}$$

$$\begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} \leftarrow \text{My vector command}$$

4 Figures and tables

4.1 Figures

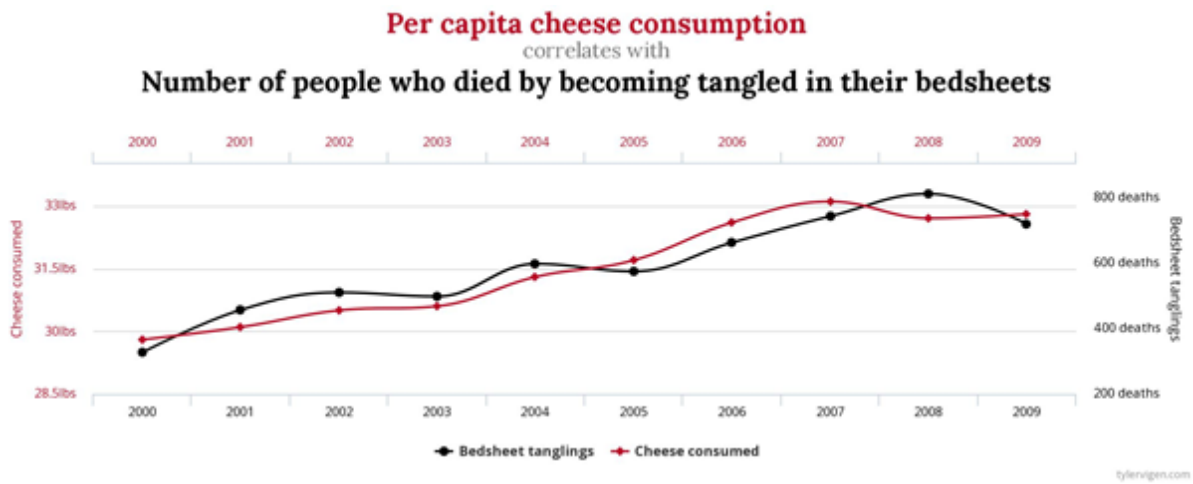


Figure 1: The caption of the figure

A reference to figure 1.

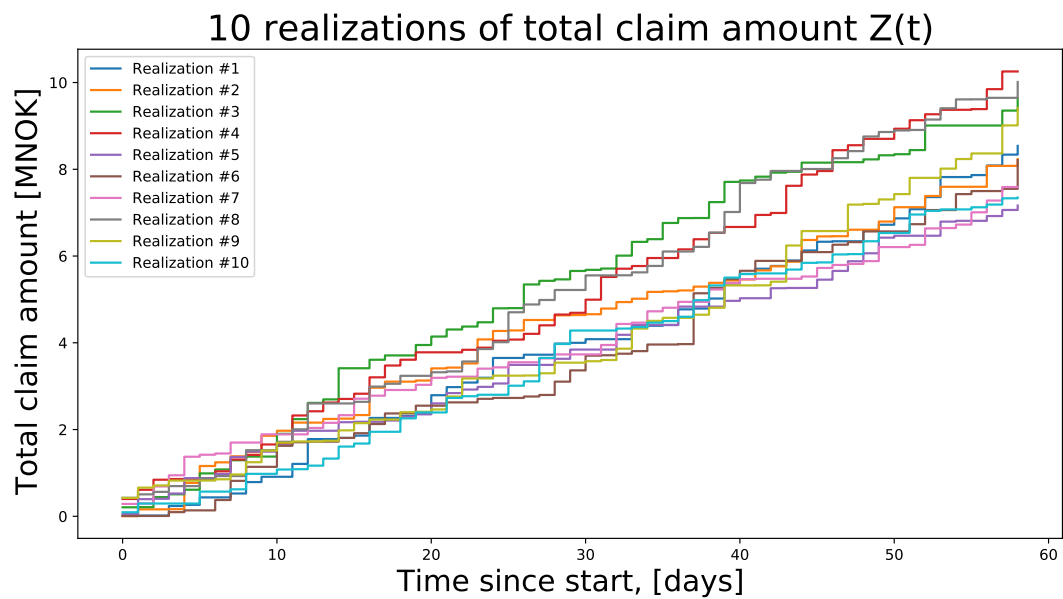


Figure 2: The caption of the other figure, we can show pdf's which may or may not be vector graphics.

4.2 Tables

Table 1: Linking equations with desired functionality and proper function name in python.

Equation	Action	Function name
??	Forward sweep	getZ
??	Approximate values from the ANN	getUpsilon
??	Start back propagation	getPK
??	Rest of the back propagation	getP
??	Y_c simplification	getYc
??	ν simplification	getNu
??	$H^{(k)}$ simplification	getHk
??	Computation of $\nabla_{\theta} J$	getdelJ
??	Updating θ	updateTheta

Referencing the table as table 1.

Table 2: *Better*: Linking equations with desired functionality and proper function name in python.

Equation	Action	Function name
??	Forward sweep	getZ
??	Approximate values from the ANN	getUpsilon
??	Start back propagation	getPK
??	Rest of the back propagation	getP
??	Y_c simplification	getYc
??	ν simplification	getNu
??	$H^{(k)}$ simplification	getHk
??	Computation of $\nabla_{\theta} J$	getdelJ
??	Updating θ	updateTheta

We can also reference the better lookup table, table 2 which uses horizontal rules from the `booktabs` package.

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5 Referencing

I hereby cite [1]. I can also cite [2].

This is a quote which cites [1]

I may also “quote” my sources [1].

References

- [1] A. Einstein, “Zur Elektrodynamik bewegter Körper. (German) [On the electrodynamics of moving bodies],” *Annalen der Physik*, vol. 322, no. 10, pp. 891–921, 1905. DOI: <http://dx.doi.org/10.1002/andp.19053221004>.
- [2] P. A. M. Dirac, *The Principles of Quantum Mechanics* (International series of monographs on physics). Clarendon Press, 1981, ISBN: 9780198520115.

A The Appendix

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