

L<sup>A</sup>T<sub>E</sub>X Template  
James Cook University Cairns

Hunter Kruger-Ilingworth (14198489)

June 24, 2024

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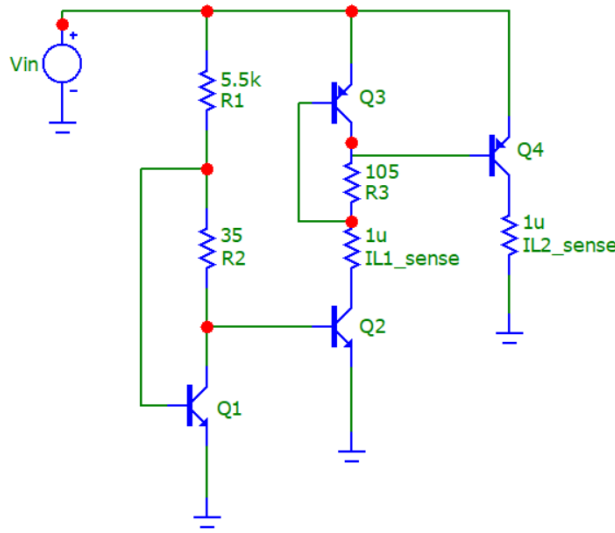
## Intro

This is my cool document. I have a lot of cool things to say. **note to self: Improve this introduction**

## Feature Demonstration

### Images

I made a couple of latex commands that make inserting images a bit shorter. I made a command called `\insertimage {}{}{}`, which takes three arguments: the image filename, the caption, and the label. I also made a command called `\insertbigimage {}{}{}`, which does the same thing, but for big images that are too wide to be placed in a single column. Figures 1 and 2 are the result of using these commands (Though the big image is too big to fit on this page).



**Fig. 1.** Example Image

### Math

This isn't really a feature of my template, but more a feature of L<sup>A</sup>T<sub>E</sub>X itself. Here is some Math:

$$C = A \times B = \begin{bmatrix} c_{11} & c_{12} & c_{13} \\ c_{21} & c_{22} & c_{23} \\ c_{31} & c_{32} & c_{33} \end{bmatrix} \quad (1)$$

Here is some more ChatGPT gave me:

$$\hat{f}(\xi) = \int_{-\infty}^{\infty} f(x) e^{-2\pi i x \xi} dx \quad (2)$$

I made a couple of commands that make writing math a bit easier. For example, I made a command called `\E {}`, which takes one argument, the exponent. For example, `\E {3}` will display as  $\cdot 10^3$ . I also made a command called `\abs {}`, which takes one argument, the value to be enclosed in absolute value bars. For example, `\abs {-3}` will display as  $|-3|$ <sup>1</sup>

### Tables

I don't have any custom commands to make tables, but I can still make them My recommendation is to use ChatGPT to generate the table for you.

Column 1	Column 2
Data 1	Data 2
More Data 1	More Data 2
Even More Data 1	Even More Data 2
Dummy Data 1	Dummy Data 2
Another Data 1	Another Data 2

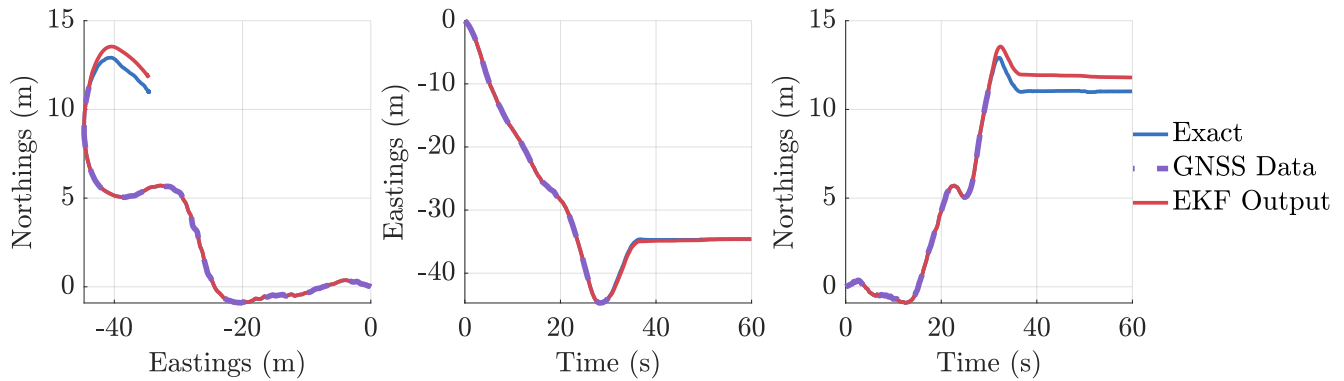
**Table 1:** A small table

I (mostly ChatGPT) have configured a way for latex to read `.xlsx` and `.csv` files, which can be seen in table 2. This table was generated using a `.csv` file, with the column names changed to have nice math in them. Table 2 shows this.

Reco- rding	$\Delta P_{\text{avg}}$ $-\Delta P'_{\text{avg}}$ (m)	$\Delta P_{\text{fin}}$ $-\Delta P'_{\text{fin}}$ (m)	$\Delta P_{\text{max}}$ $-\Delta P'_{\text{max}}$ (m)
1	-0.0091	-0.0611	-0.0601
2	0.006	0.2037	-0.0651
3	0.0002	0.0018	-0.0029
4	0.0008	0.1437	0.1447
5	0.0062	0.0154	0.0139
6	0.0286	0.1566	-0.0558

**Table 2:** Data from `tables/data.csv`

<sup>1</sup>Only works in a math environment, either in an align/equation environment or between \$ \$ symbols. By the way footnotes are also a thing in L<sup>A</sup>T<sub>E</sub>X.



**Fig. 2.** Example Big Image (Made using MATLAB)

## Code

I also made a command for inline code, `\code {}`. This command takes one argument, the code to be displayed. For example, `\code {print("Hello World")}` will display as `print("Hello World")`. Groundbreaking, I know.

I also made a command for code blocks, `\codeblock {}{}{}`

### Listing 1: Example Python Code

```
1 import numpy as np
2 def incmatrix(genl1, genl2):
3     m = len(genl1)
4     n = len(genl2)
5     M = None #to become the incidence matrix
6     VT = np.zeros((n*m,1), int) #dummy
       variable
7     x = 0
8     #compute the bitwise xor matrix
9     M1 = bitxormatrix(genl1)
10    M2 = np.triu(bitxormatrix(genl2),1)
11
12    for i in range(m-1):
13        for j in range(i+1, m):
14            [r,c] = np.where(M2 == M1[i,j])
15            for k in range(len(r)):
16                VT[(i)*n + r[k]] = 1;
17                VT[(i)*n + c[k]] = 1;
18                VT[(j)*n + r[k]] = 1;
19                VT[(j)*n + c[k]] = 1;
20
21            if M is None:
22                M = np.copy(VT)
23            else:
24                M = np.concatenate((M, VT
25                                ), 1)
26
27            VT = np.zeros((n*m,1), int)
28    return M
```

This command takes four arguments: the language, the caption, the label, and the filename. Mostly, I'd recommend using `\onecolumn` before using this command. This way, the code won't do any weird overflowing stuff, like you can see on line 24 in listing 1

## Discussion

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## Conclusion

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