ElegantPaper: An Elegant LaTeX Template for Working Paper

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摘要

This paper illustrates the usage of the ElegantPaper template, which is designed for writing working paper. This template is based on the standard LaTeX article class. The goal of this template is to make the writing process easier and more comfortable. You can get rid of all the worries about format. Just enjoy it, if you have any questions or suggestions, please contact me at: ddswhu@outlook.com.

1 Introduction

2 凸集

2.1 仿射集合和凸集

2.1.1 仿射集合

如果通过集合C中任意两个不同点的直线（注意与凸集区分开，凸集要求是线段）仍然在集合中，则称集合是仿射的。将这一概念拓展到空间中多个点的情况，可以归纳出结论：一个仿射集包含其中任意点的仿射组合（仿射组合等价于线性组合）。如果C是一个仿射集合且$x_0 \in C$，则集合

$$V = C - x_0 = \{x - x_0 | x \in C\} \tag{1}$$

是一个子空间（即关于加法和数乘是封闭的），不妨设v_1，$v_2 \in V$，α，$\beta \in \mathbf{R}$，则有$v_1 + x_0 \in V$，$v_2 + x_0 \in V$，由于C是仿射的，且$\alpha + \beta + (1 - \alpha - \beta) = 1$，故有

$$\alpha v_1 + \beta v_2 + x_0 = \alpha(v_1 + x_0) + \beta(v_2 + x_0) + (1 - \alpha - \beta)x_0 \in C \tag{2}$$

因此我们有$\alpha v_1 + \beta v_2 \in V$，所以仿射集合$C$可以表示为

$$C = V + x_0 = v + x_0 | v \in V \tag{3}$$

*Thank Peiyi Yao for good suggestions.

即一个子空间加上一个偏移量。偏移量x_0可以为C中任意一点。仿射集合C的维数被定义为子空间V的维数。

例：线性方程组的解集$\{x|Ax = b\}$即为仿射集合，与仿射集关联的子空间即为A的零空间。

This template is based on the standard LaTeX article class, which means you can pass the arguments of article class to it (`a4paper`, `12pt` and etc.).

2.2 Font Settings

I change the default article font computer modern to `newtx` series, and the default font size is set to `11pt`.

- `newtxtext` package for text font, similar to times new roman font.
- `newtxmath` package for math font, close to `times` and `mtpro2` packages.
- `newtxtt` package for typewriter font, with option `scale = 0.8`.

These packages operate perfectly but are inappropriate for big operators, for example `\sum` and `\prod`, thus, I change these operators back to computer modern font. Equation (4) shows the effects of these fonts:

$$(a + b)^n = \sum_{k=0}^{n} C_n^k a^{n-k} b^k \tag{4}$$

The `\linespread` (controls line spacing) is set to 1.3, and I use `microtype` to improve the font justification. `type1cm` package is used to remove the font shape and font size warning messages.

2.3 Custom Commands

I don't change any default command or environment, which means you can use all the basic LaTeX commands and environments as before. Besides, I define 3 commands

1. `\email{#1}`: create the hyperlink to email address.
2. `\figref{#1}`: same usage as `\ref{#1}`, but start with label text **<Figure n>**.
3. `\tabref{#1}`: same usage as `\ref{#1}`, but start with label text **<Table n>**.

2.4 List Environments

When you are using `itemize`, `enumerate`, or `description` environment, please add the `noitemsep` option to these environments. For example,

```
\begin{itemize}[noitemsep]
    \item Routing and resource discovery;
    \item Resilient and scalable networks;
    \item Distributed storage and search.
\end{itemize}
```

- Routing and resource discovery;
- Resilient and scalable computer networks;
- Distributed storage and search.

2.5 Table

I strongly recommend you to use the `booktabs` package in your paper. It adds three commands to make the table prettier, ie. `\toprule`, `\midrule` and `\bottomrule`. Here is an example.

表 1: Regression Result Example

	(1) price	(2) price
mpg	-238.9***	-49.51
	(53.08)	(86.16)
weight		1.747***
		(0.641)
constant	11,253***	1,946
	(1,171)	(3,597)
observations	74	74
R-squared	0.220	0.293

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

2.6 Graphics

To include a graphic, you can use figure environment as usual. **Figure** 1 shows the effect. You can put all your images in the sub directories (`./image/`, `./img/`, `./figure/`, `./fig/`) of your current working directory.

```
\begin{figure}[!ht]
    \centering
    \includegraphics[width=0.6\textwidth]{mpg.png}
    \caption{The Relationship between MPG and Weight\label{fig:mpg}}
\end{figure}
```

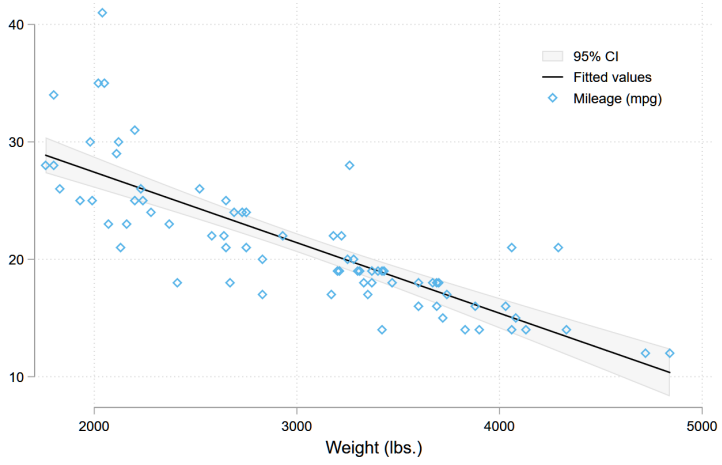

图 1: The Relationship between MPG and Weight

2.7 Bibliography

This template uses BibTEX to generate the bibliography, the default bibliography style is `aer`. Chen et al. (2018) use data from a major peer-to-peer lending marketplace in China to study whether female and male investors evaluate loan performance differently. You can add bib items (from Google Scholar, Mendeley, EndNote, and etc.) to `wp_ref.bib` file, and cite the bibkey in the `tex` file.

References

Chen, Jia, Jiajun Jiang, and Yu jane Liu, "Financial Literacy and Gender Difference in Loan Performance," *Journal of Empirical Finance*, 2018, *48* (71673007), 307–320.

Einav, Liran and Amy Finkelstein Mark R. Cullen, "Estimating Welfare in Insurance Markets Using Variation in Prices," *Quarterly Journal of Economics*, 2010, *CXXV* (August), 877–921.

Havrylchyk, Olena and Marianne Verdier, "The Financial Intermediation Role of the P2P Lending Platforms," *Comparative Economic Studies*, 2018, *60* (1), 115–130.