How to Use LaTeX and r® to Write a Paper

Professional O. Writer

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1 Figures

This is a section for figures. Random Ref. [1, p. 91] embeddeed in text. Random Ref. [7, p. 71] embeddeed in text.

1.1 Regression Plots

We setup variable definitions without actually evaluating them, then we put the pieces together, result shown in Figure 1.1. Random Ref. [5, p. 11] embeddeed in text.

```
> x <- 1:100
> y <- 3 + 0.25*x^(.315) + 2*x + 1.5*rnorm(x, 2, 15)
```

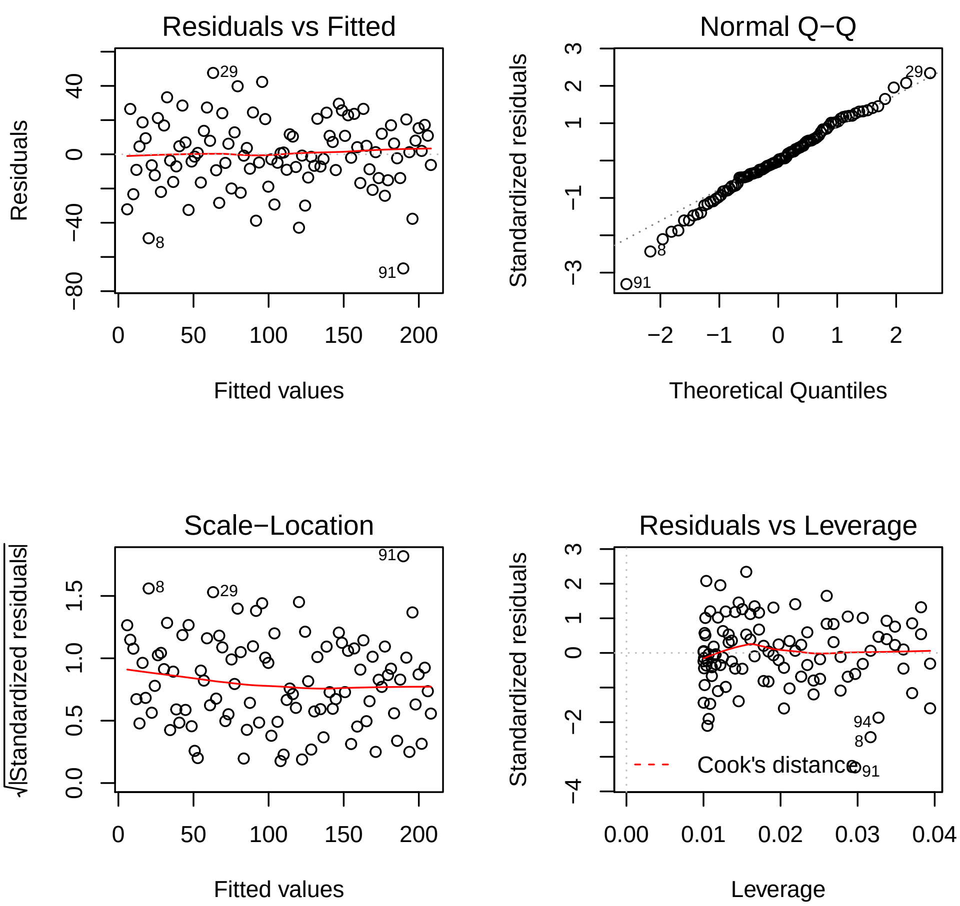


Figure 1: First Regression Plots

1.2 Regression Parameters

Here is the regression result. Random Ref. [5, p. 11] embeddeed in text. Random Ref. [4, p. 71] embeddeed in text.

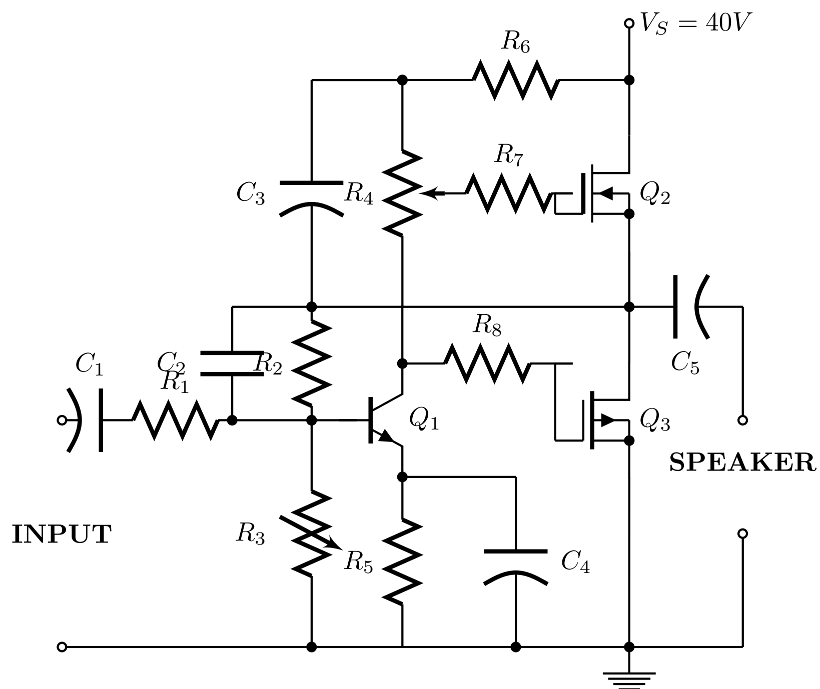
```
Call:
lm(formula = y ~ x)

Residuals:
    Min      1Q  Median      3Q     Max
-66.717 -10.045  -0.046  13.050  47.583

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  3.83601    4.12764   0.929    0.355
x            2.04191    0.07096  28.775   <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 20.48 on 98 degrees of freedom
Multiple R-squared:  0.8942,	Adjusted R-squared:  0.8931
F-statistic:   828 on 1 and 98 DF,  p-value: < 2.2e-16
```

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	3.8360	4.1276	0.93	0.3550
x	2.0419	0.0710	28.78	0.0000

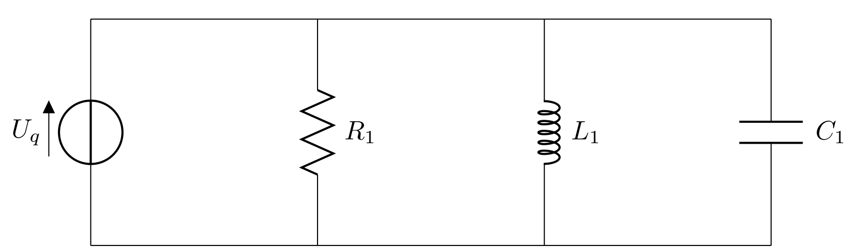
Table 1: Linear regression model for cats data.

2 Applied Circuits

Paragraph1 If there is a very simple circuit, use package "circuitikz". Random Ref. [4, p. 121] embeddeed in text. Random Ref. [6, p. 47] embeddeed in text. Random Ref. [5, p. 47] embeddeed in text. Random Ref. [5, p. 47] embeddeed in text. Random Ref. [5, p. 47] embeddeed in text. This example make use of the circuitikz and siunitx packages for drawing a 18W MOSFET Amplifier for one-channel. Source: http://www.circuitstoday.com/mosfet-amplifier-circuits.



Here is another simple example circuit.



3 More Figures

This is section ”More Figures”, shown in Figure 3. Random Ref. [7, p. 121] embeddeed in text. Random Ref. [3, p. 47] embeddeed in text. Random Ref. [2, p. 47] embeddeed in text.

```
> x <- 1:100
> y <- 3 + 0.25*x^(.315) + 2*x + 1.5*rnorm(x, 2, 15)
> par(mfrow=c(1,3))
> plot(x, y, main = "Linear Regression Plot")
> abline(lm(y~x))
> hist(y, breaks=10)
> hist(residuals(lm(y~x)), breaks=5)
```

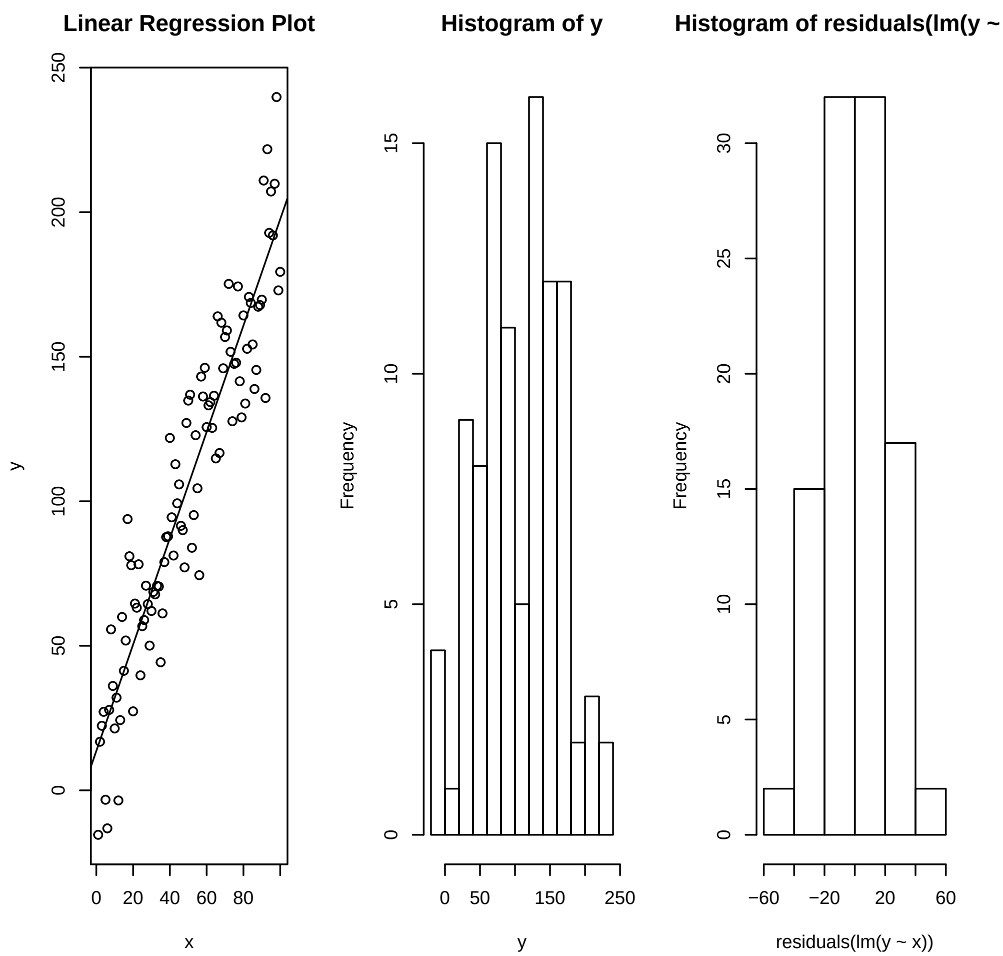


Figure 2: XY Plot and Histograms

3.1 Part MF1

Random Ref. [7, p. 77] embeddeed in text. This formula $f(x) = x^2$ is an example. $\frac{1}{\sqrt{x}}$, $\left(\frac{1}{\sqrt{x}}\right)$.
$\alpha and A$, $\gamma and \Gamma$,$\delta and \Delta$ $\theta and \Theta$ $\Lambda and \lambda$, $\forall x \in X$, $\quad \exists y \leq \epsilon$

$$\sum_{i=1}^{10} \sum_{j=1}^{i} t_(i,j)$$
$$\iiint f(x,y,z)dxdydz \log_a b$$

the quick brown fox jumps over a lazy dog

$$\begin{aligned} f(x) &= x^2 \\ g(x) &= \frac{1}{x} \\ F(x) &= \int_b^a \frac{y^(.0073z_{i_j})}{x} x^3 \end{aligned}$$

3.2 Part MF2

3.2.1 part mf2-1

$$\begin{bmatrix} 2 & 0 & 1 \\ 4 & 1 & 2 \\ 6 & 2 & 3 \end{bmatrix} \begin{bmatrix} 2 & 0 & \dots & 1 \\ 4 & 1 & \dots & 2 \\ \vdots & \vdots & \ddots & \vdots \\ 6 & 2 & \dots & 3 \end{bmatrix}$$

3.3 Subsection MF3

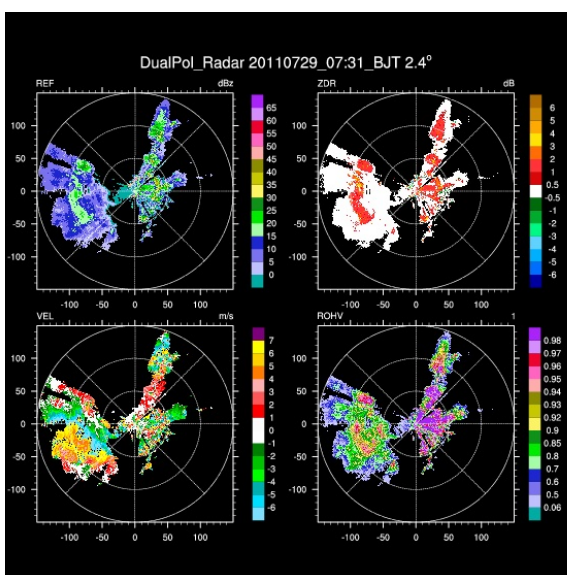


Figure 3: Example of LaTeX picture

4 Text

This is section "Text". Random Ref. [1] embeddeed in text. Random Ref. [3, p. 47] embeddeed in text. Random Ref. [2] embeddeed in text.

4.1 Part T1 - Equations

We have write an equation her as Equation 1 and others, such as Equation 2, Equation 3, Equation 4 and Equation 5.

$$\frac{\hbar^2}{2m}\nabla^2\psi + V\psi = E\psi. \tag{1}$$

4.1.1 Equations Used In My Thesis

Some examples from thesis which published before 18 June 2015.

$$VG(t) = f(T2C(t), NG(t), IGV(t)) \tag{2}$$

$$X_t = VG(t) \tag{3}$$

The Jinkins-Box method applied to utilize builtin arima{arima} ***functions to get the characteristics of the time series. Those AR and MA coefficients are described as:***

$$X_t = \delta + AR_1X_{t-1} + AR_2X_{t-2} + \cdots + AR_pX_{t-p} + A_t - MA_1A_{t-1} - MA_2A_{t-2} - \cdots - MA_qA_{t-q} \tag{4}$$

Currently the LRM applied to predict, but SVM (Support Vector Machine) method will be applied in the near future. I hope.

$$p(CompressorStall|N_{CombinedFlights}) = \beta_0 + \sum_{i=1}^{p}\beta_i * AR_i + \sum_{j=1}^{q}\beta_{j+p} * MA_j + \epsilon) \tag{5}$$

4.1.2 A Familar Equation

if

$$ax^2 + bx + c = 0$$

then

$$x = \frac{-b \pm \sqrt[2]{b^2 - 4ac}}{2a}$$

4.1.3 A Simple Laplace Transform

$$\mathcal{L}\{\cos\omega t\} = \int_0^\infty \mathrm{e}^{-st}\cos\omega t \mathrm{d}t = \left.\frac{e^{-st}(\omega\sin\omega t - s\cos\omega t)}{s^2+\omega^2}\right|_0^\infty = \frac{s}{s^2+\omega^2}$$

4.2 Part T2

Paragraph2 Random Ref. [1], Ref. [7, p. 27], Ref. [3], Ref. [2, p. 27], Ref. [4], Ref. [6, p. 27] and Ref. [5] embeddeed in text.

Subparagraph Random Ref. [5, p. 17], Ref. [6], Ref. [4, p. 27], Ref. [2], Ref. [3, p. 27], Ref. [7] and Ref. [1, p. 27] embeddeed in text.

4.3 Illustration of ARIMA-LRM Method in My Thesis

Here is to illustrate how my ARIMA-LRM method compute the LRM coefficients (of Equation 5) from the ARIMA coefficients which are denoted as of Equation4):

$$\begin{pmatrix} y_1 \\ y_2 \\ \vdots \\ y_m \\ y_{m+1} \\ \vdots \\ y_n \end{pmatrix} \sim \begin{pmatrix} AR_{1_1} & AR_{2_1} & \dots & AR_{p_1} & MA_{1_1} & MA_{2_1} & \dots & MA_{q_1} \\ AR_{1_2} & AR_{2_2} & \dots & AR_{p_2} & MA_{1_2} & MA_{2_2} & \dots & MA_{q_2} \\ \vdots & \vdots & \ddots & \vdots & \vdots & \vdots & \ddots & \vdots \\ AR_{1_n} & AR_{2_n} & \dots & AR_{p_n} & MA_{1_n} & MA_{2_n} & \dots & MA_{q_n} \end{pmatrix}$$

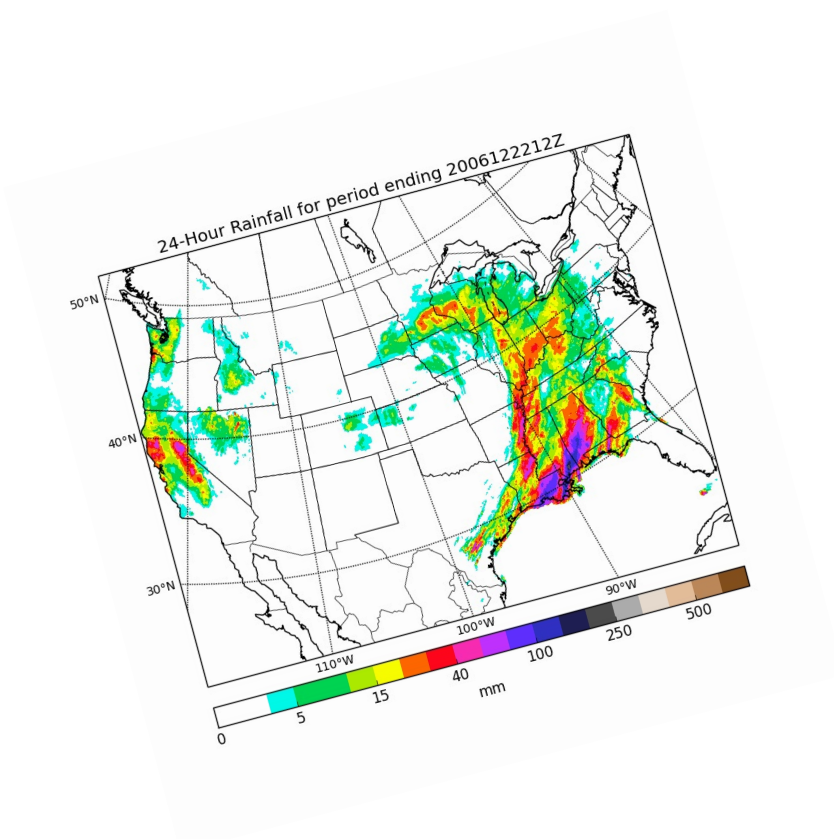


Figure 4: Another LaTeX example of picture

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List of Tables

1 Linear regression model for cats data. 3

References

[1] John Doe. *The Book ithout Title One*. Dummy Publisher First, 2100.

[2] Michel Goossens, Frank Mittelbach, and Alexander Samarin. *The LaTeXCompanion*. Reading, Massachusetts: Addison-Wesley, 1993.

[3] George D. Greenwade. “The Comprehensive Tex Archive Network (CTAN)”. In: *TUGBoat* 14.3 (1993), pp. 342–351.

[4] Clara M. Li. “The Comprehensive Animation Analysis Guide (CLARA)”. In: *DreamWorks* 14.3 (2019), pp. 123–456.

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[7] Johnston Smith. *The Book without Title Two*. Dummy Publisher Second, 2200.