How to Use LaTeX and r® to Write a Paper

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Contents

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)
```
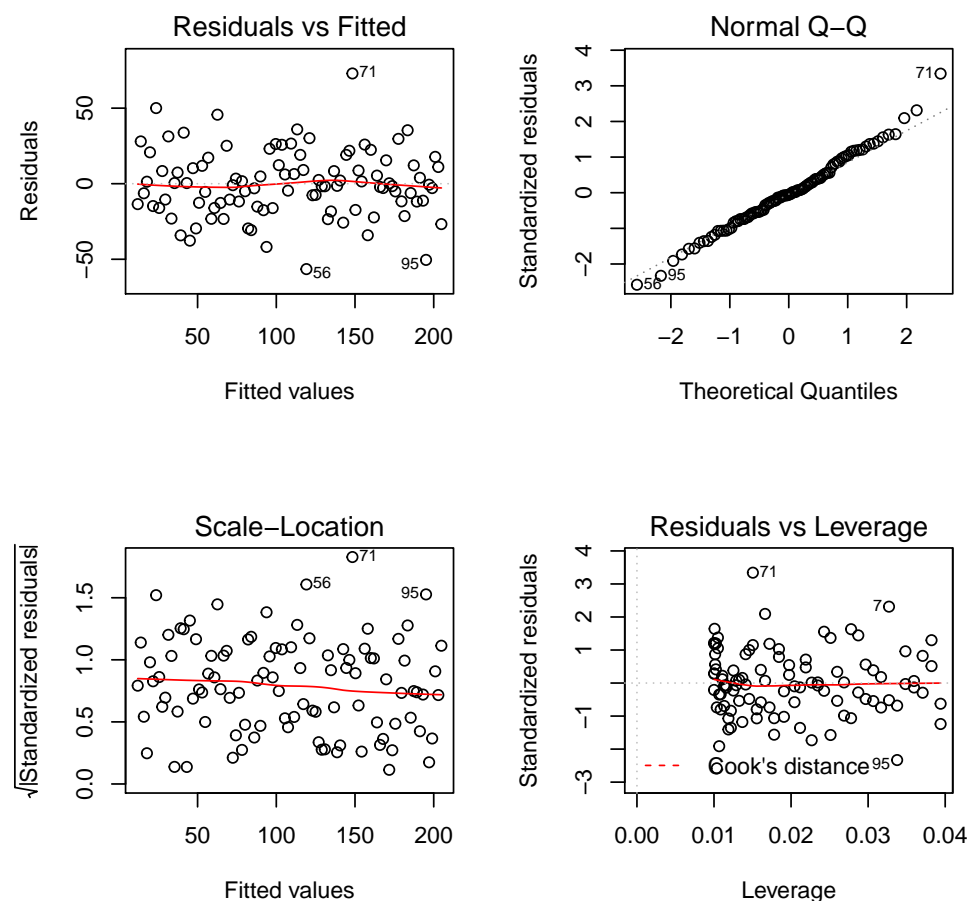
Figure 1: First Regression Plots

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
-56.51 -13.84  -1.20  12.16  72.95

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  10.0247     4.4326   2.262   0.0259 *
x             1.9484     0.0762  25.569   <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 22 on 98 degrees of freedom
Multiple R-squared:  0.8696,        Adjusted R-squared:  0.8683
F-statistic: 653.8 on 1 and 98 DF,  p-value: < 2.2e-16
```

|	Estimate	Std. Error	t value	Pr($>$|t|)
(Intercept)	10.0247	4.4326	2.26	0.0259
x	1.9484	0.0762	25.57	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.
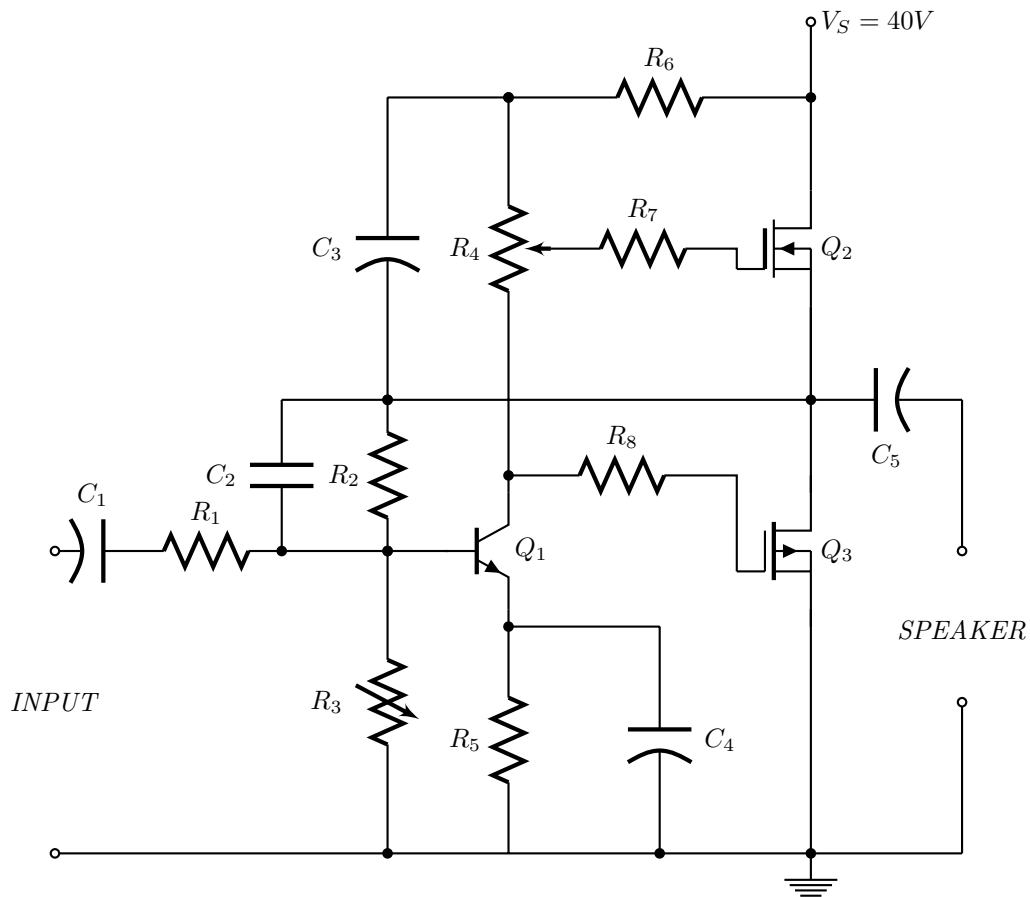
Here is another simple example circuit.
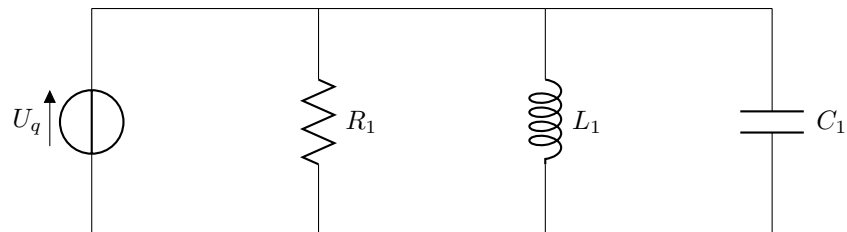
3   More Figures

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)
```
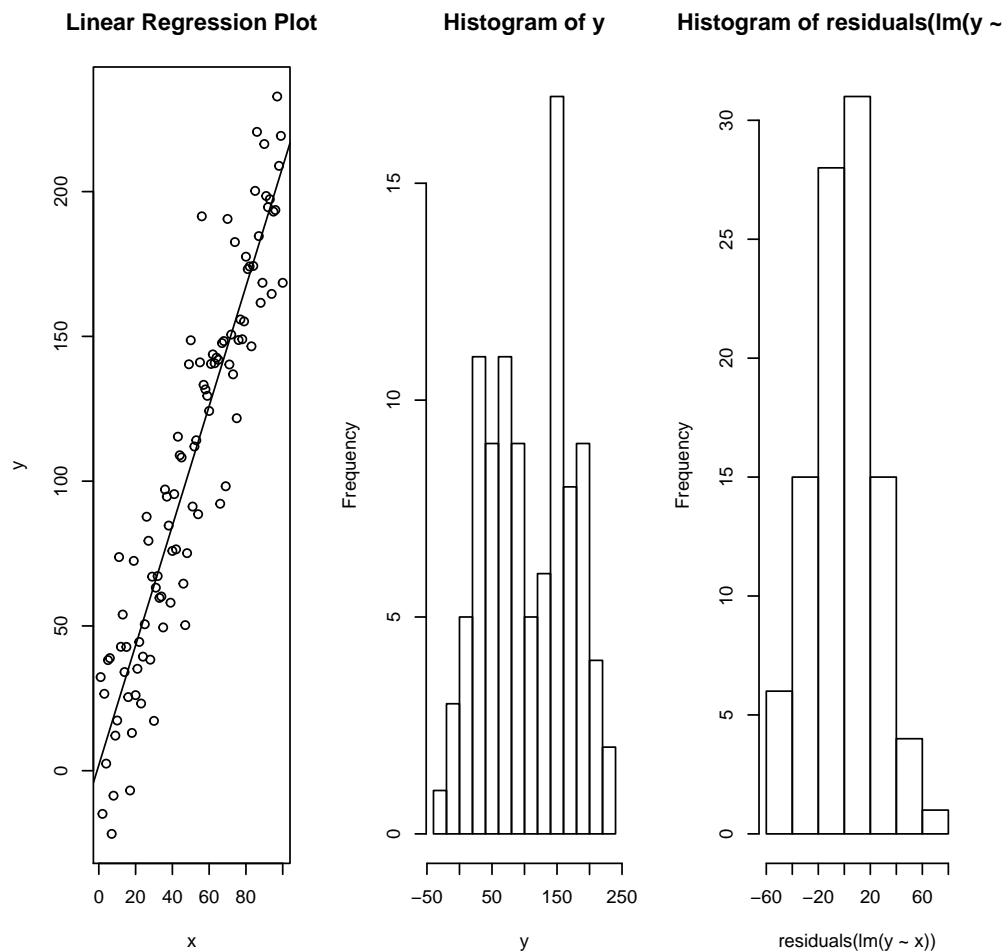

Figure 2: XY Plot and Histograms

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

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

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
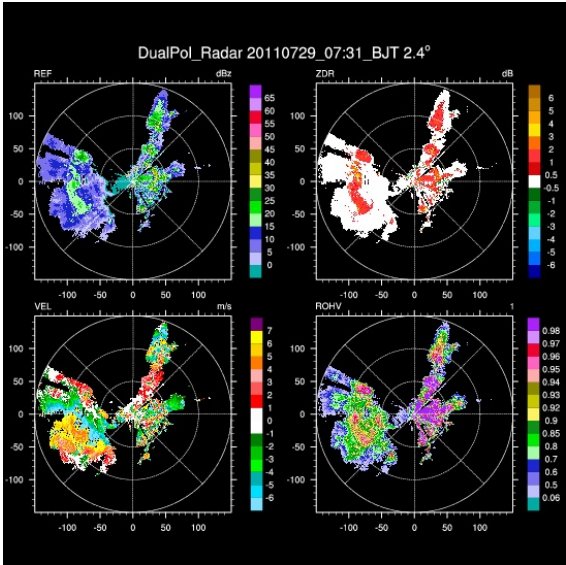

Figure 3: Example of LATEX picture

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:*

$$X_t = \delta + AR_1 X_{t-1} + AR_2 X_{t-2} + \cdots + AR_p X_{t-p} + A_t - MA_1 A_{t-1} - MA_2 A_{t-2} - \cdots - MA_q A_{t-q} \tag{4}$$

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

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

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 Equation 4):

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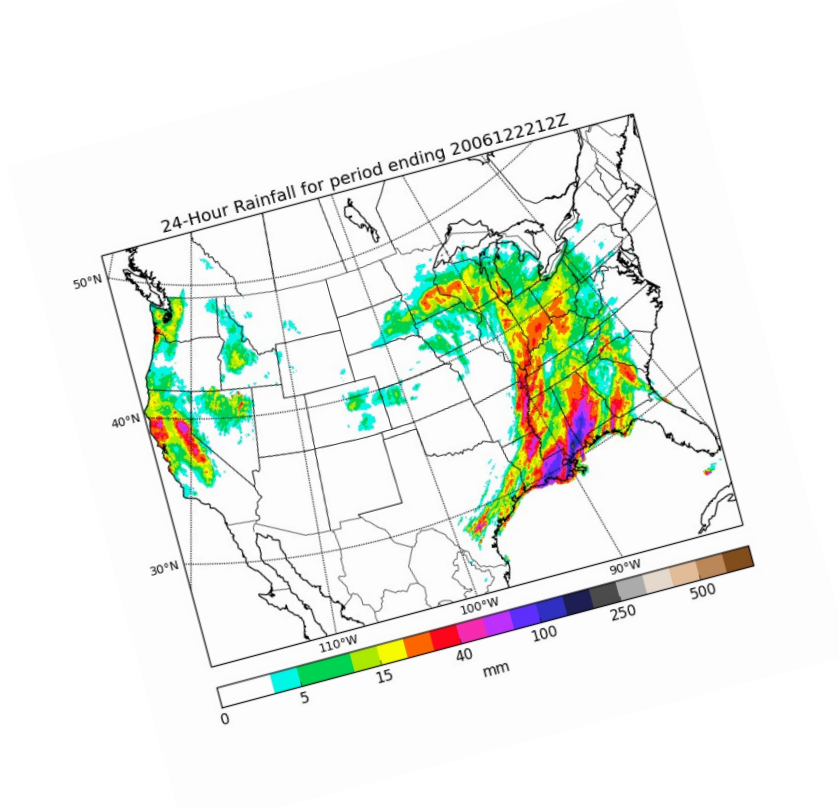$$

Figure 4: Another LATEX example of picture

List of Figures

List of Tables

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.

[5]   Noah C. Li. "They All Play Minecraft". In: *Gaming Industry Analysis*. Ed. by Clara Li. Vol. 17. How It Works 07. Nothing Impossible. 12345 Buiding Road, Cedar Hills, Utah 84056: Electronics House, July 2014, pp. 78 –82.

[6]   Margaret M. Seely. "They All Went To Islands". In: *Optic Fiber Communications*. Ed. by Hood Peter. Vol. 27. How It Works 17. Nothing Impossible Right. July 2014, pp. 78 –82.

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