

How to Use LaTeX and R to Write a Paper

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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)
```

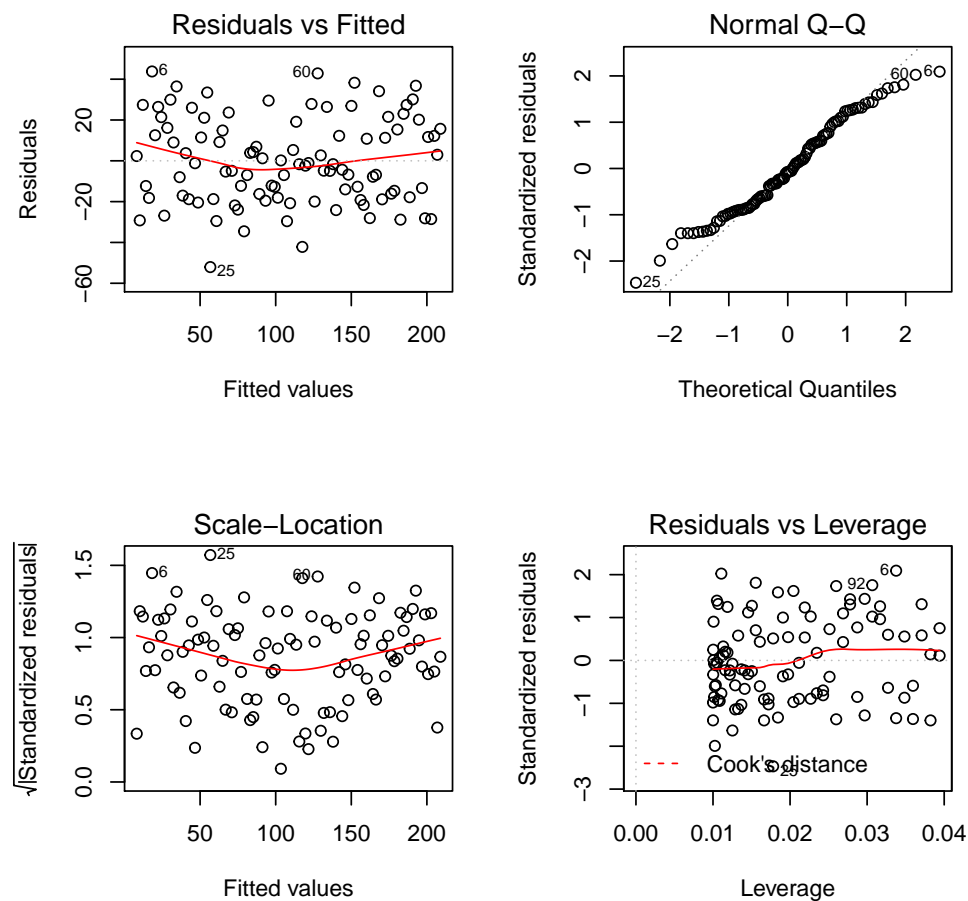


Figure 1: First Regression Plots

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
-52.080	-17.908	-1.653	15.791	43.777

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	6.06273	4.28886	1.414	0.161
x	2.02864	0.07373	27.514	<2e-16 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 21.28 on 98 degrees of freedom

Multiple R-squared: 0.8854, Adjusted R-squared: 0.8842

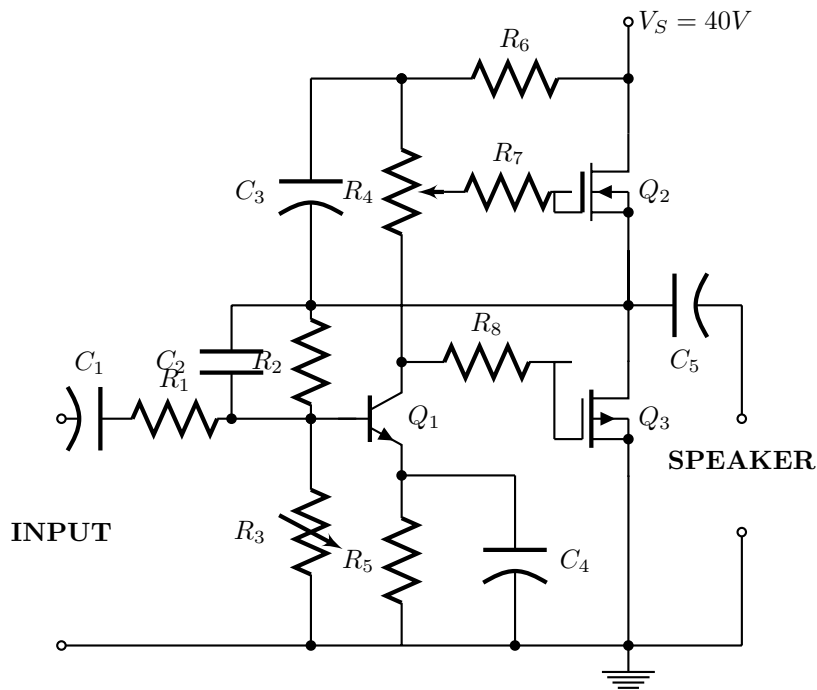
F-statistic: 757 on 1 and 98 DF, p-value: < 2.2e-16

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	6.0627	4.2889	1.41	0.1606
x	2.0286	0.0737	27.51	0.0000

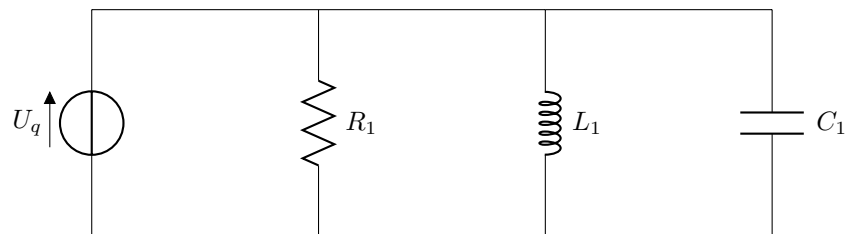
Table 1: Linear regression model for cats data.

2 Applied Circuits

Paragraph1 If there is a very simple circuit, use package "circuitikz". Random Ref. [4, p. 121] embedded in text. Random Ref. [6, p. 47] embedded in text. Random Ref. [5, p. 47] embedded in text. Random Ref. [5, p. 47] embedded in text. Random Ref. [5, p. 47] embedded 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] embedded in text. Random Ref. [3, p. 47] embedded in text. Random Ref. [2, p. 47] embedded 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)
```

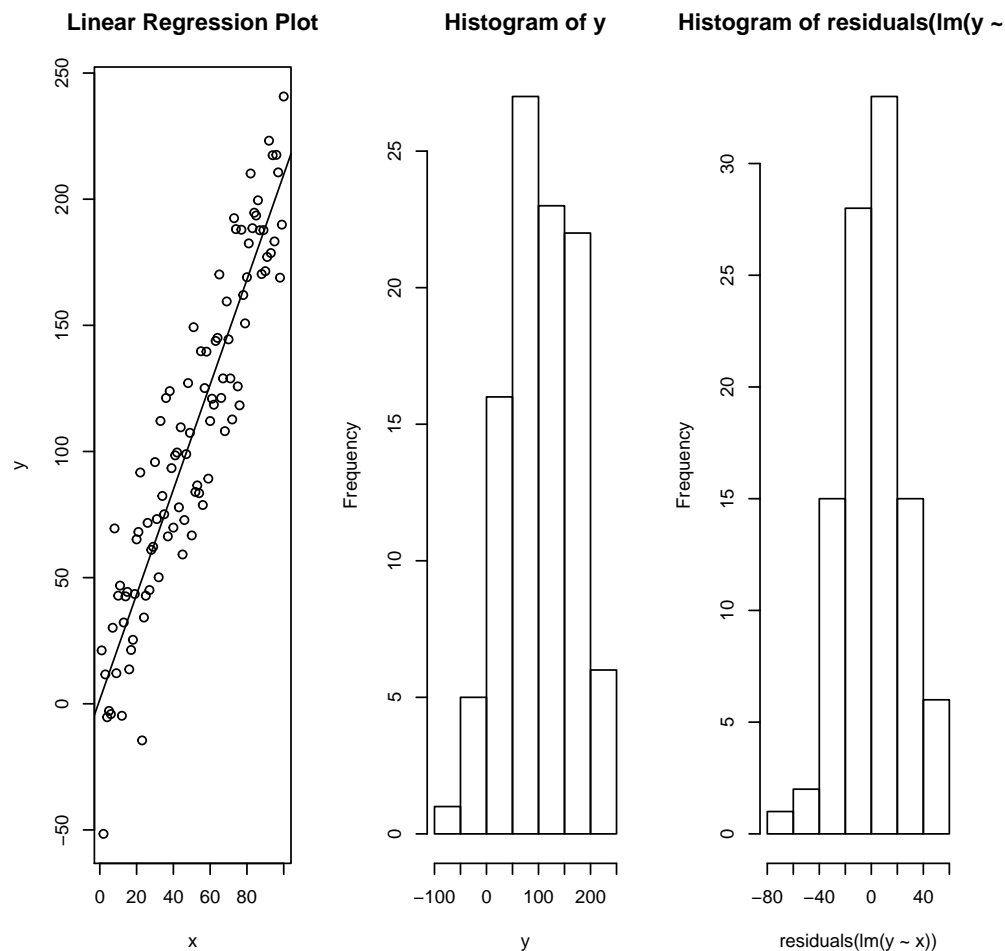


Figure 2: XY Plot and Histograms

3.1 Part MF1

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

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

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

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

3.3 Subsection MF3

4 Text

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

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

4.1.1 Equations Used In My Thesis

Some examples from thesis which published before 18 June 2015.

$$VG(t) = f(T2C(t), NG(t), IGV(t)) \quad (2)$$

$$X_t = VG(t) \quad (3)$$

The Jenkins-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:

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

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

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

4.1.2 A Familar Equation

if

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

then

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

4.1.3 A Simple Laplace Transform

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

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):

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

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References

- [1] John Doe. *The Book ithout Title One*. Dummy Publisher First, 2100.
- [2] Michel Goossens, Frank Mittelbach, and Alexander Samarin. *The L^AT_EX Companion*. 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.