

---

# Linear Regression with Normal Equations Algorithm (without Lasso)

## Table of Contents

Clearing and closing the figures .....	1
Loading data set and visualizing it .....	1
Creating training and testing datasets for the learning algorithm .....	1
Applying normal equations .....	1
Training accuracy of our algorithm using Normal equations .....	2
Testing our learnt algorithm using Normal equations .....	2

## Clearing and closing the figures

```
close all;
clc;
clear all;
```

## Loading data set and visualizing it

```
fprintf('Loading dataset...\n\n');
load('comp.mat');
X = comp(:,1:7);
y = comp(:,8);

[X, mu, sigma] = normalize(X);
% adding intercept term
X = [ones(size(X,1),1) X];

Loading dataset...
```

## Creating training and testing datasets for the learning algorithm

```
Xtrain = X(1:180,:); % disp(size(Xtrain));
ytrain = comp(1:180,8); % disp(size(ytrain));

Xtest = X(181:end,:); % disp(size(Xtest));
ytest = comp(181:end,8); % disp(size(ytest));
```

## Applying normal equations

```
fprintf('Linear Regression using Normal equations...\n');
% Acquiring parameters using normal equations
```

```
[theta] = normalEqn(Xtrain, ytrain);
```

*Linear Regression using Normal equations....*

## Training accuracy of our algorithm using Normal equations

```
% Applying learnt parameters on test data
pricetr = Xtrain * theta;

% Showing algorithm accuracy
errortr = abs(pricetr - ytrain) ./ ytrain; % error between actual and
predicted
accuracytr = 100 - (mean(errortr) * 100); % percentage accuracy
obtained
fprintf('Training accuracy on training set: %f\n', accuracytr);
```

*Training accuracy on training set: 67.755168*

## Testing our learnt algorithm using Normal equations

```
% Applying learnt parameters on test data
pricete = Xtest * theta;

% Showing algorithm accuracy
errorte = abs(pricete - ytest) ./ ytest; % error between actual and
predicted values
accuracyte = 100 - (mean(errorte) * 100); % percentage accuracy
obtained
fprintf('Testing accuracy on test set: %f\n', accuracyte);
```

*Testing accuracy on test set: 61.654801*

*Published with MATLAB® R2016b*