

The background of the slide features a complex network diagram. It consists of numerous small, dark grey circular nodes connected by thin, light grey lines. These lines form a web-like structure that fills the entire frame. A large, solid dark teal rectangle is positioned on the right side of the image, partially overlapping the network diagram. The text is centered within this teal rectangle.

Condition Monitoring of Structures, Machines and Processes

Tutorial 06

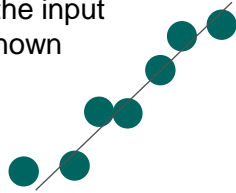
5

MATLAB: LINEAR REGRESSION

Linear Regression

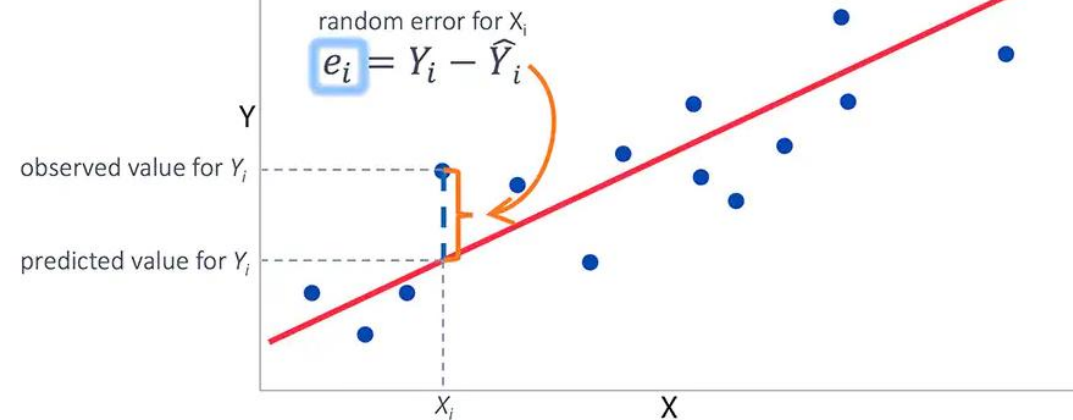
Regression

how does the input
best fit a known
structure?



Method of Least Squares

$$\sum e_i^2 = \sum (Y_i - \hat{Y}_i)^2$$



Exercise 14: Linear Regression

- Import the data set data. The first column are population of city in 10,000s, the second profit of a food truck in a given city in \$10,000s.
- Plot the data and label the axis.
- Try to visually estimate the variables for a linear fit. (y-intercept and slope)
- Plot the estimated fit using hold on.
- As a rough guess predict the profit for a population of 35K.
- Now use MatLabs function `polyfit()` to estimate the parameters for a linear fit.
 - Repeat step 4 and 5 with the new parameters.
- Compare the 'error' of both fits according to the least squares.