Local Polynomial Regression

Statistical Machine Learning - Individual project

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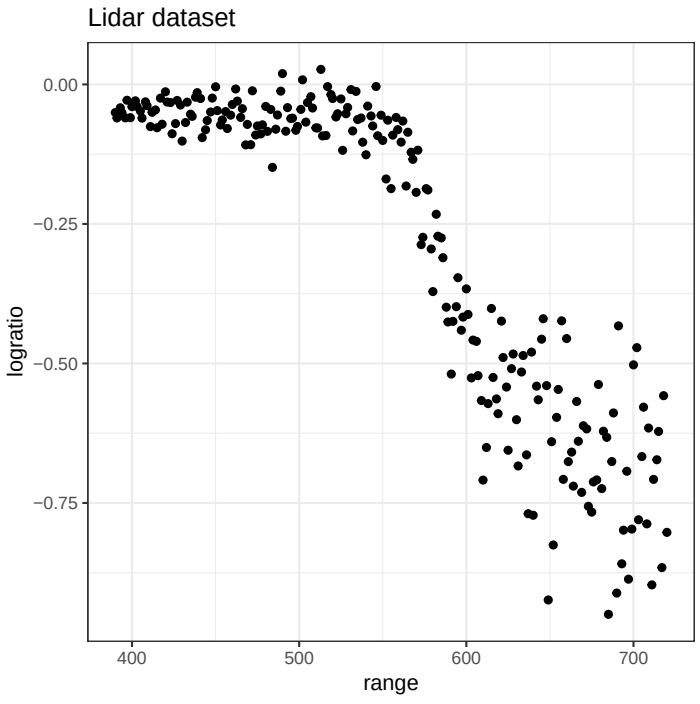
Problem statement: Lidar dataset



LIDAR = LIght Detection And Ranging

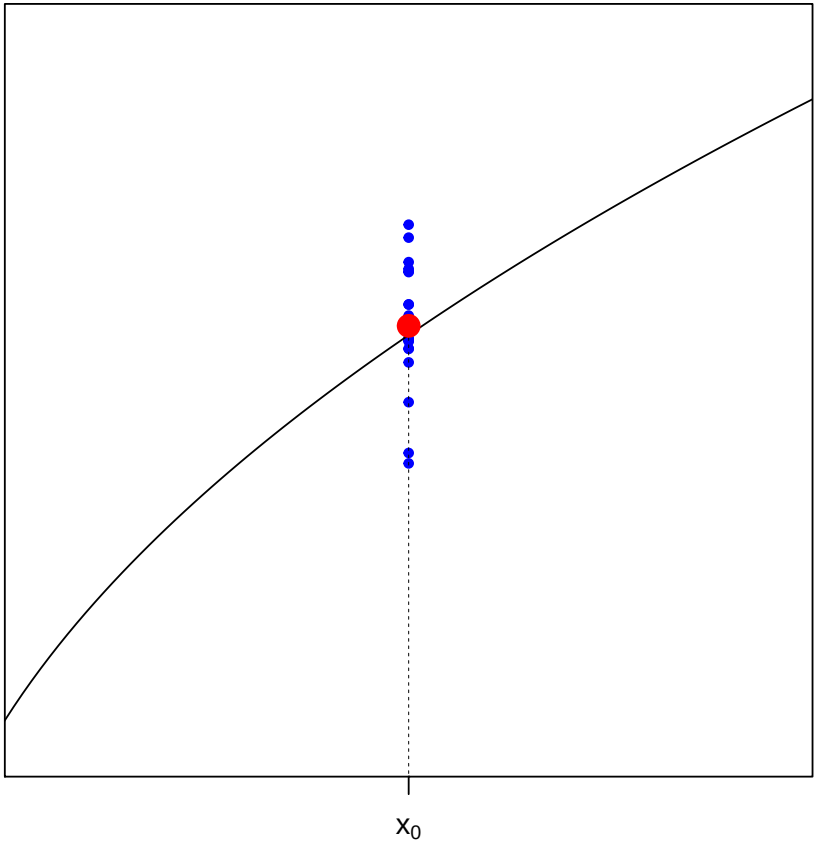
- it is a surveying method that measures distance to a target by illuminating the target with laser light and measuring the reflected light with a sensor
- x: distance travelled before the light is reflected back to its source
- y: logarithm of the ratio of received light from two laser sources

The objective is to estimate

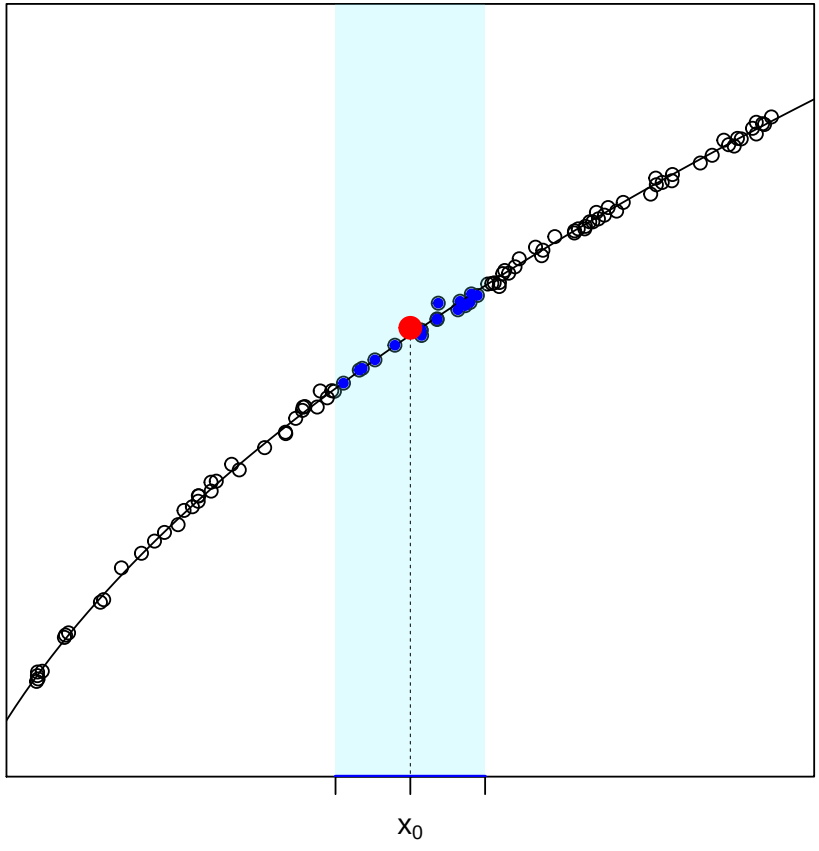
$$f(x) = E[Y \mid X = x]$$

What does local means?

If we had enought point with $x = x_0$



We can consider points "close" to x_0



Nadaraya-Watson kernel regression

Some kernels proposed

Nadaraya-Watson estimator issues

Local polynomial regression