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| Cheat Sheet: Linear Regression | |
| Aim: Linear regression is a linear approach to modelling the relationship between a scalar response and one or more explanatory variables.  Base Model approach: DATA = TRUE SIGNAL + NOISE  Vanilla regression model:    .  Attributes: Homoscedasticity and Independence of errors  Linear Basis Function Model+…+  Finding weights for ω0 to ωj   1. Use Log Likelihood function for Gaussian distribution: 2. Derive 1. To get score function in respect to the gradient 3. Results to: 4. Introduce design matrix for different 5. This finally results to:   Meaning: To calculate the weights simply multiply the pseudo-inverse with the vector of targets.  Application: As a rule of thumb use with less than 10000 samples. | **Basis Functions**  Polynomial Basis Function:  Gaussian basis functions  Sigmoidal basis functions  Periodic basis function  Bin-based basis function |