REGULARIZATION101

Gagana B, President (AI Without Borders)

Learning Objectives

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Overfitting

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Motivation for regularisation

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Application of regression to regularized data

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Comparing analyses with and without regularisation

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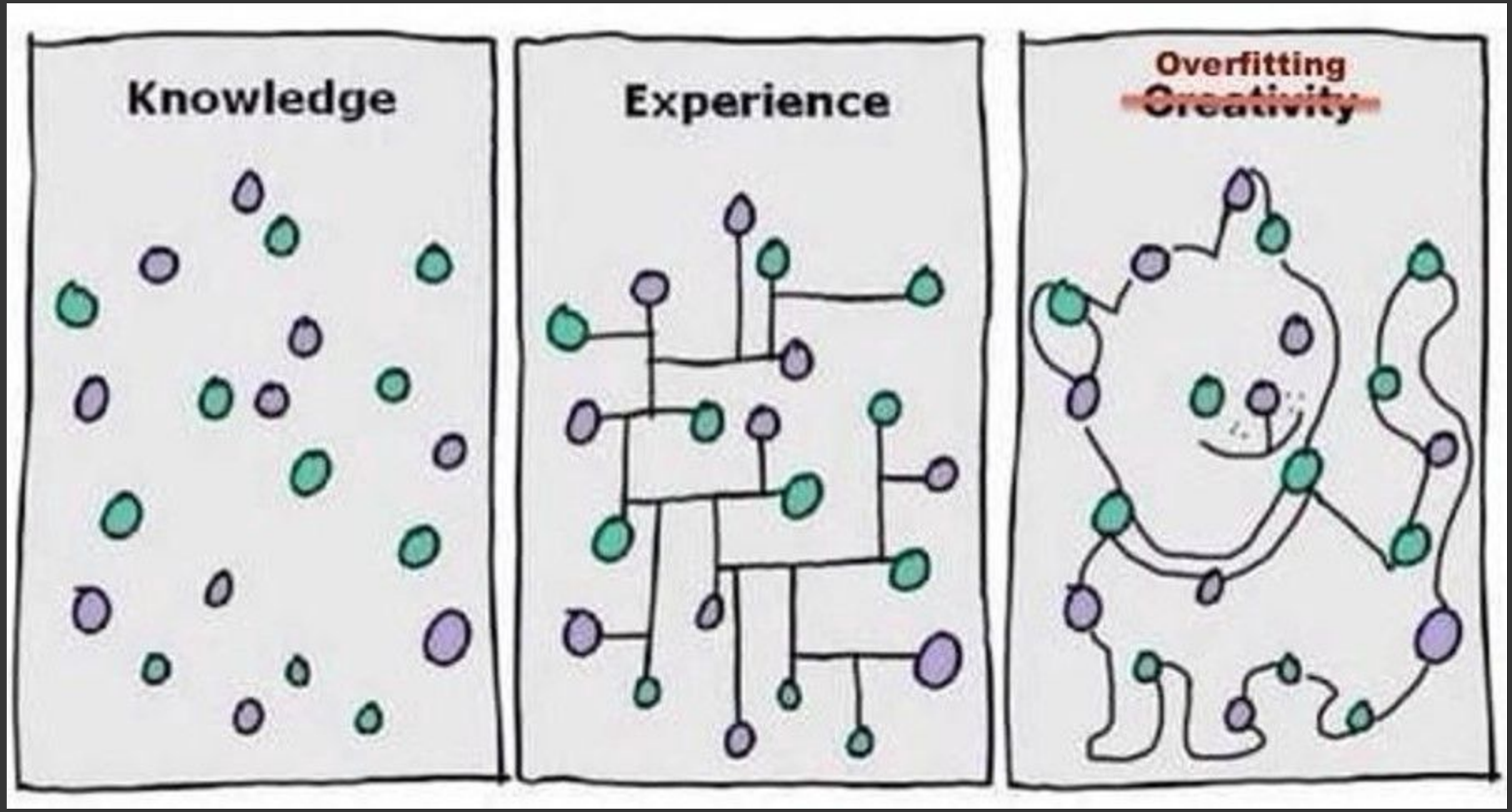
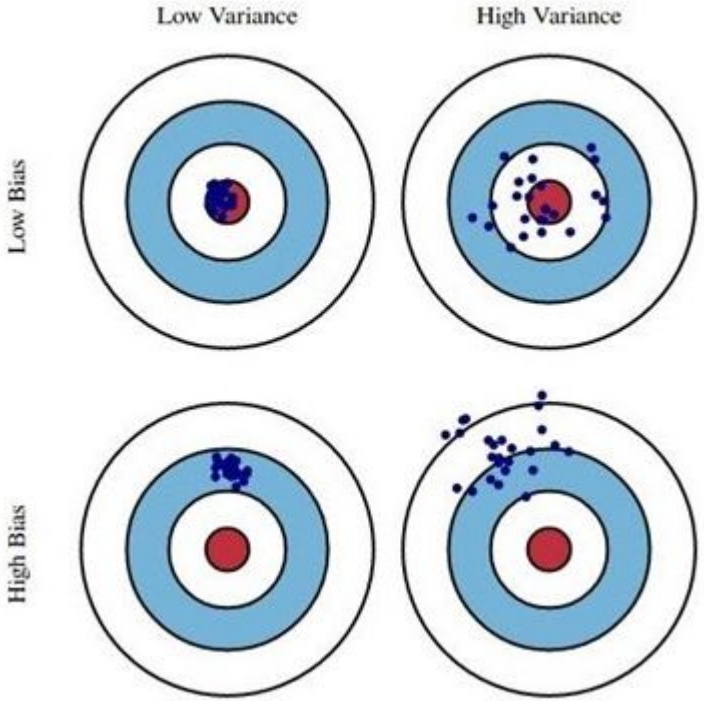
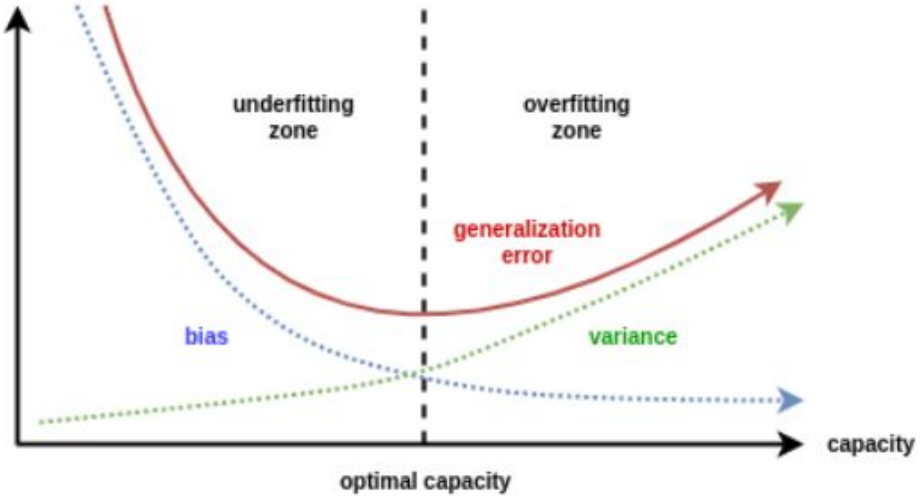

Knowledge
Experience
Overfitting
Creativity

Bias: Simplifying assumptions a model makes to better understand the target function

Variance: Error from sensitivity to fluctuations in the training set.





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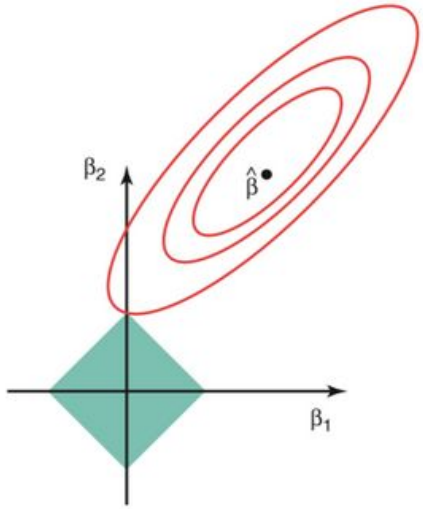
Regularisation is any modification made to the algorithm with an intention to lower generalisation error but NOT the training error!

Regularisation

- ➔ L1 or Lasso
- ➔ L2 or ridge

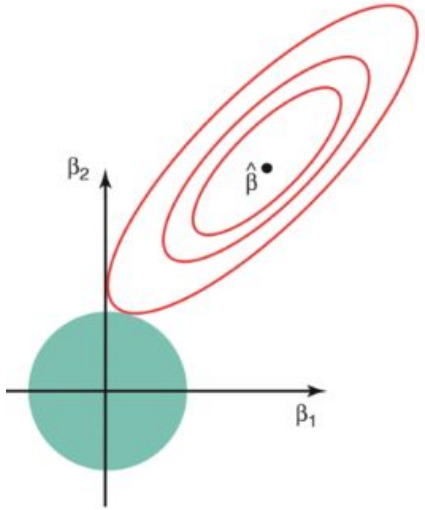
L1 Regularisation

$$Loss = Error(Y - \hat{Y}) + \lambda \sum_{1}^{n} |w_i|$$



L2 Regularisation

$$Loss = Error(Y - \widehat{Y}) + \lambda \sum_{1}^{n} w_i^2$$



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Regression in Action

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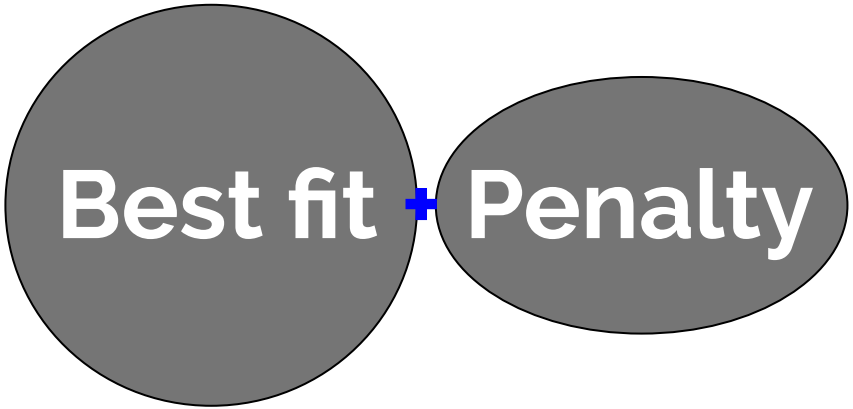

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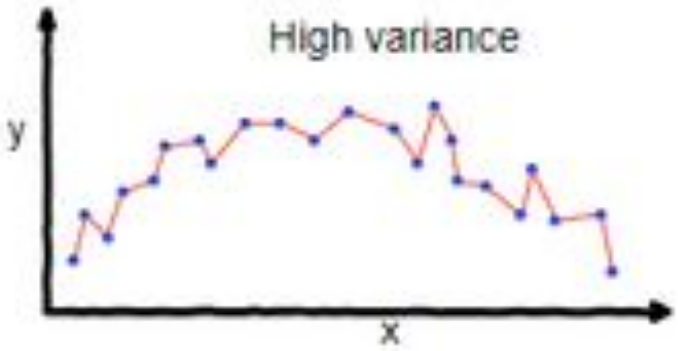
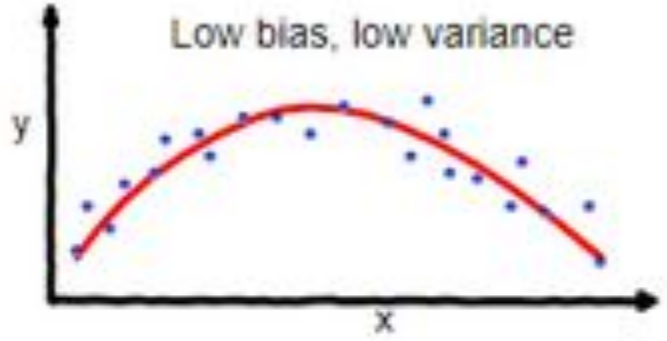
Without and With



overfitting



Good balance