Redundant Feature Selection Using Permutation Methods

Phillip Taylor, Nathan Griffiths, Abhir Bhalerao

Systems and Software Research Group,

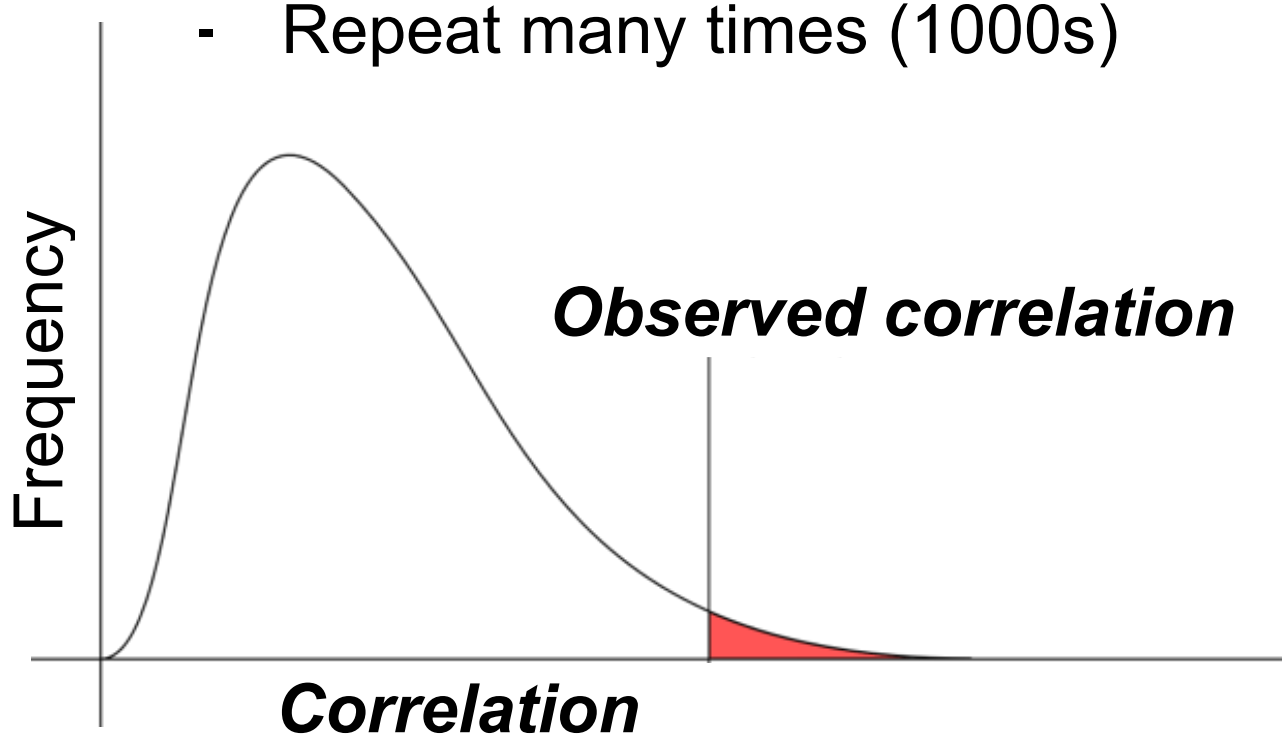
University of Warwick

phil@dcs.warwick.ac.uk

THE UNIVERSITY OF WARWICK

The permutation method

- Take the ***observed correlation*** between two variables
- Generate ***permutation distribution***
  - Randomize/Shuffle one of the variables
  - Take ***permutation correlations*** of randomised variables
  - Repeat many times (1000s)



Permutation redundancy

- Can we estimate redundancy from the permutation distributions computed during relevancy computation?

- If all permutation correlations are similar, the features are likely to be related somehow

Permutaiton of y (y')	Cor(a,y')	Cor(b,y')	Cor(c,y')
Observed (y)	0.9	0.7	0.8
First permutation	0.3	0.1	0.4
Second permutation	0.4	0.1	0.4
Third permutation	0.3	0.2	0.3

…