Machine Learning for predictive modelling based on small biomedical and clinical data

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Abstract: Experimental datasets in bioengineering are commonly limited in size, thus rendering Machine Learning impractical for predictive modelling. Novel techniques of multiple runs for model development and surrogate data analysis for model validation are suggested for prediction of biomedical outcomes based on small datasets for classification and regression tasks. The proposed framework was applied to designing a Neural Network model for osteoarthritic bone fracture risk stratification, and a Decision Tree-based models for prediction of antibody-mediated kidney transplant rejection. Despite the small datasets (35 bone specimens and 80 kidney transplants), the two models achieved high accuracy of 98.3% and 85%, respectively.

This talk will introduce Machine Learning in the context of predictive modelling, discuss the challenges specific to biomedical and clinical data, and provide two case-studies of Machine Learning applied to real-world datasets limited in size. No previous knowledge of Machine Learning is required. All are welcome!

More info: http://www2.warwick.ac.uk/fac/sci/wcpm/seminars
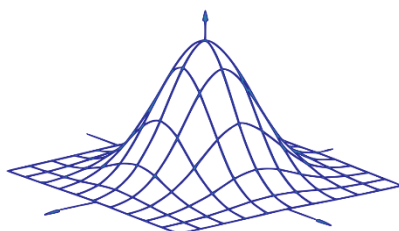
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