MACQUARIE UNIVERSITY
DEPARTMENT OF MATHEMATICS AND STATISTICS
STATISTICS SEMINAR SERIES

Speaker: Dr Emi Tanaka, School of Mathematics and Statistics, University of Sydney
Date: Tuesday, 15th October 2019
Time: 1pm-2pm
Venue: 14 SCO Avenue, Access Grid Room 146

Title: Symbolic model formulae for linear mixed models illustrated with the analysis of agricultural data

Abstract: Symbolic model formulae define the structural component of a statistical model in an easier and often more accessible terms for practitioners. The earlier instance of symbolic model formulae for linear models was applied in Genstat with further generalisation by Wilkinson and Rogers (1973). Chambers and Hastie (1993) describe the symbolic model formulae implementation for linear models in the S language which remains much the same in the R language.

Linear mixed models (also known as multi-level, nested, hierarchical or panel data models) are widely used in many disciplines owing to its flexibility to model complex, correlated structures in the data. There exists, however, many variations of symbolic model formulae for linear mixed models which often results in confusion of the fitted model. In this talk, I will compare the symbolic model formulae for the popular linear mixed model R packages: lme4 and asreml. Each model will be motivated from real analysis of agricultural data. Furthermore, I will briefly discuss some software design principles for linear mixed model specification.

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