ACADEMIC SEMINAR

Statistical computing and modelling applications in agriculture

Economic losses due to crop damage caused by frost in Australia are estimated to be many hundreds of millions of dollars per year. In Southeastern Australia, there is a frost paradox: though temperature goes up on average, the number of frost days increases in recent decades. Our study on downscaling daily minimum temperature to weather stations from 10 global climate models indicated the frost frequency won't decrease in the coming decades. To help farmers to alleviate frost risk, our recent study was to provide locally relevant information about the extent and severity of frosts. We deployed temperature loggers to collect a lot of data from four farms in two years. We utilised Multivariate Adaptive Regression Splines (MARS) modelling to develop maps of T_{min} at farm scale (30 × 30 m grid). We used terrain derived variables to generate nightly T_{min} maps across a whole farm, based on data from a single on-farm weather station. These maps were verified on more farms in a different year. Evaluation of the maps by farmers showed general agreement that the maps complemented local knowledge. These maps provide a guide for farmers to know where to start looking for frost damage.

Dr. Warren Jin

Senior Research Scientist in Analytics & Decision Science program of Data61, CSIRO, Australia

Warren is a Senior Research Scientist in Analytics & Decision Science program of Data61, CSIRO, Australia. He is currently leading two projects related with seasonal climate forecasts for agriculture. His education background is Applied Mathematics and Computer Science. His research interests include statistical computation, modelling, data mining and machine learning as well as their applications. He authored/co-authored in 100+ peer-reviewed publications in international journals/conferences. His research output has received several best paper/innovation awards.

Date: 27 May 2021 (Thursday)

Time: 14:00 - 15:30 (HK time)

Venue: Zoom meeting
link: https://lingnan.zoom.us/j/97925864843?pwd=K0YzUVpIS3hxeStyMDQwdUV1b2lNdz09

Language: English

*** All are Welcome ***