

Professor Yudi Pawitan, Karolinska Institute

Title: Epistemic confidence in the observed confidence interval

Abstract:

Confidence is defined to be epistemic if it applies to an observed confidence interval. Epistemic confidence is unavailable - or even denied - in orthodox frequentist inference, as the confidence level is understood to apply to the procedure, not to any particular interval. Yet there are obvious practical and psychological needs to think about the uncertainty in an observed interval. We extend the Dutch Book argument used in the classical Bayesian justification of subjective probability to a stronger market-based version, which prevents external agents from exploiting unused information available in any relevant subset. Pawitan and Lee (2021) showed that confidence is an extended likelihood, and the likelihood principle states that the likelihood contains all the information in the data, hence leaving no relevant subset. Intuitively, this implies that confidence associated with the full likelihood is protected from the Dutch Book, and hence is epistemic. I will present the theoretical support and illustrative examples. This is joint work with Youngjo Lee and Hangbin Lee.