THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

DEPARTMENT OF APPLIED MATHEMATICS
應 用 數 學 系

Department of Applied Mathematics Seminar

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Topic

Efficient Estimation under the Accelerated Gap-Time Model for Recurrent Events

Date| Time

6 May 2025 (Tuesday) | 11:15 – 12:15 (HK Time)

Venue

P309

Abstract:

The accelerated failure time model is a regression-like model that relates, linearly, a set of covariates to the logarithm of failure times with right censored data. The accelerated gap-time (AGT) model relates, in the same manner, a set of gap-times to covariates, albeit with recurrent events. Both models have the ability to accelerate or decelerate events occurrences via the covariates and provide a quite direct physical interpretation of event time. They are also a good alternative to the popular Cox model. They have broad applications in engineering and biomedical studies. In this talk, we introduce the AGT model for recurrent events under a family of effective age models that captures various aging patterns. Estimation of parameters with such models in any of these types of data is quite challenging because of the non-monotonicity of the score function. To alleviate this, we propose a weighted efficient score function motivated by a family of parametric baseline hazard sub-models. This approach yields estimators with nice large sample properties. We present results of the procedures for various effective age processes. Simulation studies show good approximations to the true. Limitation and extension are presented. The procedures are illustrated with a biomedical dataset.

ALL ARE WELCOME