For favour of posting

DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

Seminar

Dr. Budhi Arta SURYA

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New Zealand

will give a talk

entitled

GENERALIZED PHASE-TYPE DISTRIBUTION UNDER MARKOV MIXTURES PROCESS

Abstract

Phase-type model has been an important probabilistic tool in the analysis of complex stochastic system evolution. It was introduced by Neuts in 1975. The model describes the lifetime distribution of a continuous-time finite-state absorbing Markov chains. It has found many applications in wide range of areas such as e.g. in actuarial science, credit risk, financial economics, queuing theory, reliability theory, telecommunications, etc. It was brought to survival analysis by Aalen in 1995. However, the model has lacks of ability in modeling heterogeneity and inclusion of past information which is due to the Markov property of the underlying process that forms the model. We attempt to generalize the model by replacing the underlying by Markov mixtures process. Markov mixtures process was used to model jobs mobility by Blumen et al. in 1955. It was known as the mover-stayer model. The model describes low-productivity workers tendency to move out of their jobs occupancy by a Markov chain, while those with high-productivity tend to avoid job turnover. The model was extended by Frydman in 2005 to a mixtures of finite-state Markov chains moving at different speeds on the same state space. In general the mixtures process does not have Markov property. We revisit the Markov mixtures model for absorbing Markov chains moving at different speeds on the same finite-state space, and propose generalization of the phase-type model with multi absorbing states. The later allows us to cope with competing risks in survival analysis. The new distribution has two main appealing features: it has the ability to model heterogeneity and allows the inclusion of past information of the underlying process, and it comes in a closed form. Built upon the new distribution, we propose conditional forward (cause-specific) intensity which can be used to determine rate of occurrence of future events (caused by certain type) based on available past information. Numerical study suggests that the new distribution and its forward intensity offer significant improvements over the existing model.

on

Wednesday, January 18, 2017

(Refreshments will be served from 2:15 p.m. outside Room 301 Run Run Shaw Building)

2:30 p.m. – 3:30 p.m.

at

Room 301, Run Run Shaw Building

Visitors Please Note that the University has limited parking space. If you are driving please call the Department at 3917 2466 for parking arrangement.

All interested are welcome