European Network for Business and Industrial Statistics

Contribution ID: **10**   Type: **not specified**

Data-Driven Escalator Health Analytics and Monitoring

Monday, 11 September 2023 14:40 (30 minutes)

MTR, the major Hong Kong public transport provider, has been operating for 40 years with more than 1000 escalators in the railway network. These escalators are installed in various railway stations with different ages, vertical rises and workload. An escalator's refurbishment is usually linked with its design life as recommended by the manufacturer. However, the actual useful life of an escalator should be determined by its operating condition which is affected by runtime, workload, maintenance quality, vibration etc., rather than age only.

The objective of this project is to develop a comprehensive health condition model for escalators to support refurbishment decisions. The analytic model consists of four parts: 1) online data gathering and processing; 2) condition monitoring; 3) health index model; and 4) remaining useful life prediction. The results can be used for 1) predicting the remaining useful life of the escalators, in order to support asset replacement planning and 2) monitoring the real-time condition of escalators; including signaling when vibration exceeds the threshold and signal diagnosis, giving an indication of possible root cause (components) of the signal.

In this talk, we will provide a short overview of this project and focus on the monitoring (part 3) of this project where we use LSTM neural networks and PU (positive unlabeled) learning to set up a method that can deal with unstable vibration data that is unlabeled.

Keywords

remaining usefull life, statistical process monitoring, health analytics

Classification

Both methodology and application

Primary author: ZWETSLOOT, Inez (City University of Hong Kong)

Presenter: ZWETSLOOT, Inez (City University of Hong Kong)

Session Classification: INVITED Young Statisticians

Track Classification: Other/special session/invited session