European Network for Business and Industrial Statistics

A Hierarchical Statistical Model to Track the Performance of a Distributed Industrial Fleet

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The research presented showcases a collaboration with a leading printer manufacturer to facilitate the remote monitoring of their industrial printers installed at customer sites. The objective was to create a statistical model capable of automatically identifying printers experiencing more issues than expected based on their current operating conditions. To minimize the need for extensive data collection, a unified model was developed for all printers, using a hierarchical approach. By incorporating a hierarchical set of random effects, information sharing among the installed printer base was enabled, while also accounting for each printer's unique characteristics. The model was implemented using a Bayesian framework, enabling automatic identification of out-of-control situations.

Keywords

SPC Bayesian conditional moniitoring

Classification

Both methodology and application

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