SEMINAR
DEPARTMENT OF STATISTICS
THE CHINESE UNIVERSITY OF HONG KONG

Anomaly Detection in Trade Declarations using Deep Learning Techniques: A Risk-assessment Approach to Identify Misclassification and Incorrect Valuation

INVITED SPEAKERS

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VENUE
SWH1 · Fung King Hey Building Swire Hall 1 · CUHK

ABSTRACT

In Hong Kong, merchandise trade statistics are compiled based on the commodity information given on the trade declarations submitted by traders. Due to the complexity of the standardised commodity classification system (i.e. Hong Kong Harmonized System, or HKHS in short), there are often reporting errors, especially in the commodity codes and quantities. With around 20 million declarations received annually, the availability of this big data source motivates us to adopt deep learning techniques to detect the reporting errors. This paper proposes a mechanism consisting of three deep learning models for checking the commodity code, quantity and value, which offers an end-to-end solution to data quality assurance for declarations. The results show that the proposed mechanism could enhance the accuracy of error detection, which is conducive to improving the quality of trade statistics. With the use of text analytics techniques, the mechanism could fully utilise free-text commodity descriptions declared by traders to check the accuracy of the declared information comprehensively. It also overcomes some limitations of the traditional rule-based models. The whole study demonstrates the potential of using deep learning approach in quality assurance of existing statistical systems for official statistics.