Proposed Research Topic: Independent Component Analysis-Seasonal Auto Regressive Integrated Moving Average (ICA-SARIMA) Models for Tourist Arrival Forecasting in Macao

Abstract

This project focuses on tourist arrival modeling and forecasting by proposing a novel data mining and statistical technique called Independent Component Analysis (ICA). ICA models are proposed to separate the dominant factors that determine the levels of Macao tourist arrival in terms of seasonal and monthly data. The dominant factors are further classified and analyzed by their practical meanings. The impact of each dominant factor is assessed from a quantitative perspective. More importantly, this project will introduce a new approach that incorporates ICA into sophisticated time series model, named as the Independent Component Analysis-Seasonal Auto Regressive Integrated Moving Average (ICA-SARIMA). The application of the new model will be tested to forecasting corresponding Macao tourist arrival in the next few years. That is, ICA models can be developed as an analytical tool for tourist arrival analysis. The project's research outcomes are expected to improve the competitiveness of Macao tourism and hotel industries and benefit the Macao government and tourism participators from setting their operational and marketing strategies. This research can also provides some recommendation and guidelines for the future solutions of Macao tourist capacity issues with the fact of fast growing of tourist arrival in Macao in the past few years.