The Hong Kong University of Science and Technology

Department of Information Systems, Business Statistics and Operations Management

Seminar Announcement

Using Domain Adaptation Transfer Learning to Resolve Label-Lacking Problem: An Application to Deception Prediction

by

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Date : 18 November 2020, Wednesday
Time : 10:00 am - 11:30 am
Venue : LSK 3003, 3/F LSK Business Building (mixed-mode)
Zoom : Click HERE to join Zoom
Zoom ID: 982 2215 7981 (Passcode: 763452)

Abstract:

This study develops a domain adaptation transfer learning model in processing a large amount of textual data to identify deceptive content. We alleviate the label-lacking problem by first extracting linguistic features associated with fake general news (source domain) using deep learning and natural language processing techniques. We then transfer these features to three specific target domains: political news, financial news, and online reviews, which face the same challenge of insufficient label examples to different degrees. We derive a measure, transferability score, to quantify the transferability between the source and target domains. We show that features learned from substantial source domain can be transferred to predict deception in the target domain with scarce labeled data, and the prediction accuracy can be further increased when (1) domain adaptation is implemented, (2) multiple deceptive news in the source domains are leveraged, and (3) a small amount of labeled target data is provided for fine-tuning. We also show that transfer learning offers the most value when the level of transferability between the source and target domains is between medium to medium high. This work contributes to the stream of business analytics and computerized textual analysis research in information systems (IS) by addressing the label-lacking problem that is a critical challenge hindering machine learning applications in business.

Bio:

NG Ka Chung (Boris) is a doctoral candidate in the Department of Information Systems, Business Statistics and Operations Management, School of Business and Management, the Hong Kong University of Science and Technology (HKUST). His research interests include statistical network modeling, deep learning applications, textual analysis, and business analytics. He holds an MPhil in Information Systems and a BSc in Risk Management and Business Intelligence from HKUST.