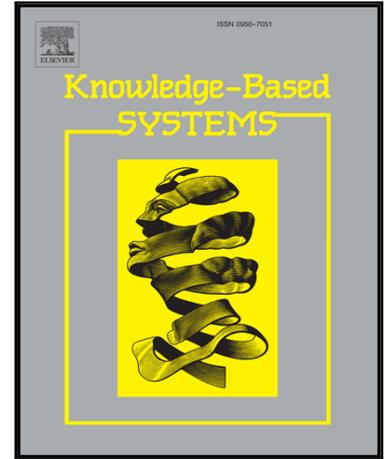


Accepted Manuscript

Fuzzy Competence Model Drift Detection for Data-driven Decision Support Systems

Fan Dong, Guangquan Zhang, Jie Lu, Kan Li

PII: S0950-7051(17)30375-1
DOI: [10.1016/j.knosys.2017.08.018](https://doi.org/10.1016/j.knosys.2017.08.018)
Reference: KNOSYS 4016



To appear in: *Knowledge-Based Systems*

Received date: 10 March 2017
Revised date: 25 August 2017
Accepted date: 26 August 2017

Please cite this article as: Fan Dong, Guangquan Zhang, Jie Lu, Kan Li, Fuzzy Competence Model Drift Detection for Data-driven Decision Support Systems, *Knowledge-Based Systems* (2017), doi: [10.1016/j.knosys.2017.08.018](https://doi.org/10.1016/j.knosys.2017.08.018)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Fuzzy Competence Model Drift Detection for Data-driven Decision Support Systems

Fan Dong^{a,b}, Guangquan Zhang^b, Jie Lu^b, Kan Li^{a,*}

^a*School of Computer Science & Technology, Beijing Institute of Technology, Beijing 100081, China*

^b*Decision Systems & e-Service Intelligence (DeSI) Lab, Centre for Artificial Intelligence (CAI), University of Technology Sydney, Ultimo, NSW 2007, Australia*

Abstract

This paper focuses on concept drift in business intelligence and data-driven decision support systems (DSSs). The assumption of a fixed distribution in the data renders conventional static DSSs inaccurate and unable to make correct decisions when concept drift occurs. However, it is important to know when, how, and where concept drift occurs so a DSS can adjust its decision processing knowledge to adapt to an ever-changing environment at the appropriate time. This paper presents a data distribution-based concept drift detection method called fuzzy competence model drift detection (FCM-DD). By introducing fuzzy sets theory and replacing crisp boundaries with fuzzy ones, we have improved the competence model to provide a better, more refined empirical distribution of the data stream. FCM-DD requires no prior knowledge of the underlying distribution and provides statistical guarantee of the reliability of the detected drift, based on the theory of bootstrapping. A series of experiments show that our proposed FCM-DD method can detect drift more accurately, has good sensitivity, and is robust.

Keywords: Concept drift, data-driven decision making, fuzzy sets theory, competence model

*Corresponding author

Email addresses: fan.dong@student.uts.edu.au (Fan Dong),
guangquan.zhang@uts.edu.au (Guangquan Zhang), jie.lu@uts.edu.au (Jie Lu),
likan@bit.edu.cn (Kan Li)

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات