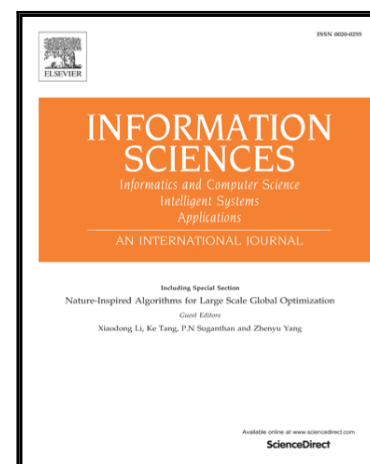


Accepted Manuscript

Using contextualized activity-level duration to discover irregular process instances in business operations

Ping-Yu Hsu , Yu-Cheng Chuang , Yao-Chung Lo ,
Shuang-Chuan He

PII: S0020-0255(16)31240-3
DOI: [10.1016/j.ins.2016.10.027](https://doi.org/10.1016/j.ins.2016.10.027)
Reference: INS 12586



To appear in: *Information Sciences*

Received date: 10 April 2016
Revised date: 7 October 2016
Accepted date: 9 October 2016

Please cite this article as: Ping-Yu Hsu , Yu-Cheng Chuang , Yao-Chung Lo , Shuang-Chuan He , Using contextualized activity-level duration to discover irregular process instances in business operations, *Information Sciences* (2016), doi: [10.1016/j.ins.2016.10.027](https://doi.org/10.1016/j.ins.2016.10.027)

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.

Using contextualized activity-level duration to discover irregular process instances in business operations

Ping-Yu Hsu^{a,*}, Yu-Cheng Chuang^a, Yao-Chung Lo^a, Shuang-Chuan He^a

^a*Department of Business Administration, National Central University, No.300, Jhongda Rd., Jhongli Dist., Taoyuan City, Taiwan (R.O.C.)*

**Corresponding author: Ping-Yu Hsu*

E-mail: pyhsu@mgt.ncu.edu.tw

Address: No.300, Jhongli Dist., Taoyuan City, Taiwan (R.O.C.)

Tel.: 886-3-4227151 ext: 66168

ABSTRACT

Effective time management is one of the most crucial characteristics of a successful business. For most businesses, time management is an area that has much scope for further improvement. Irregularities in the execution duration of business processes impede corporate agility and can incur severe consequences, such as project failures and financial losses. Efficient managers must constantly identify potential irregularities in process durations to anticipate and avoid process glitches. This paper proposed a k-nearest neighbor method for systematically detecting irregular process instances in a business using a comprehensive set of activity-level durations, namely execution, transmission, queue, and procrastination durations. Moreover, because agents, customers, and other variables influence the progress of processes, contextual information was presented using fuzzy values. The values and corresponding membership functions were used to adjust the durations of each activity. This proposed method was applied to the system logs of a medium-sized logistics company to identify irregularities. Experts confirmed that 81% of the identified irregular instances were abnormal.

Keywords: Activity-level duration; Fuzzy set; Process instances; Process irregularities; Workflow

Download English Version:

<https://daneshyari.com/en/article/4944509>

Download Persian Version:

<https://daneshyari.com/article/4944509>

[Daneshyari.com](https://daneshyari.com)