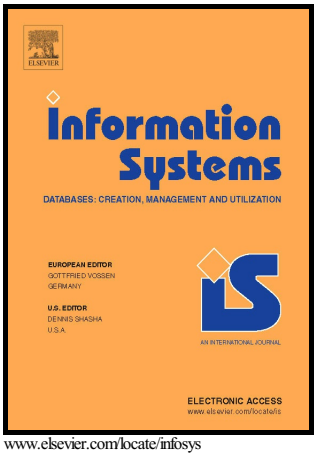
Author's Accepted Manuscript

Resolving inconsistencies and redundancies in declarative process models

Claudio Di Ciccio, Fabrizio Maria Maggi, Marco Montali, Jan Mendling



www.elsevier.com/locate/infosys

PII: S0306-4379(15)30205-2
DOI: http://dx.doi.org/10.1016/j.is.2016.09.005
Reference: IS1169

To appear in: *Information Systems*

Received date: 15 December 2015
Revised date: 20 September 2016
Accepted date: 21 September 2016

Cite this article as: Claudio Di Ciccio, Fabrizio Maria Maggi, Marco Montali an Jan Mendling, Resolving inconsistencies and redundancies in declarative proces models, *Information Systems,* http://dx.doi.org/10.1016/j.is.2016.09.005

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

ACCEPTED MANUSCRIPT

Resolving Inconsistencies and Redundancies in Declarative Process Models

Claudio Di Ciccio[a,*], Fabrizio Maria Maggi[b], Marco Montali[c], Jan Mendling[a]

[a] *Vienna University of Economics and Business, Austria*
[b] *University of Tartu, Estonia*
[c] *Free University of Bozen-Bolzano, Italy*

Accepted manuscript

Abstract

Declarative process models define the behaviour of business processes as a set of constraints. Declarative process discovery aims at inferring such constraints from event logs. Existing discovery techniques verify the satisfaction of candidate constraints over the log, but completely neglect their interactions. As a result, the inferred constraints can be mutually contradicting and their interplay may lead to an inconsistent process model that does not accept any trace. In such a case, the output turns out to be unusable for enactment, simulation or verification purposes. In addition, the discovered model contains, in general, redundancies that are due to complex interactions of several constraints and that cannot be cured using existing pruning approaches. We address these problems by proposing a technique that automatically resolves conflicts within the discovered models and is more powerful than existing pruning techniques to eliminate redundancies. First, we formally define the problems of constraint redundancy and conflict resolution. Second, we introduce techniques based on the notion of automata-product monoid, which guarantees the consistency of the discovered models and, at

*Corresponding author.
E-mail address: claudio.di.ciccio@wu.ac.at
Postal address: Vienna University of Economics and Business, Institute for Information Business (Building D2, Entrance C) – Welthandelsplatz 1, A-1020 Vienna, Austria
Phone number: +43 1 31336 5222
Email addresses: `claudio.di.ciccio@wu.ac.at` (Claudio Di Ciccio), `f.m.maggi@ut.ee` (Fabrizio Maria Maggi), `montali@inf.unibz.it` (Marco Montali), `jan.mendling@wu.ac.at` (Jan Mendling)

دریافت فوری ← متن کامل مقاله

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