


ER 2015 Submission 145

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Submission 145	
Title	Mining Process Task Post-Conditions
Submission:	 (Apr 07, 18:24 GMT) (previous versions)
Author keywords	Mining task post-conditions Semantic annotation of process models Effect mining
EasyChair keyphrases	process model (332), business process (291), effect log (290), process log (180), state update operator (174), business process model (126), semantic annotation (110), immediate effect (100), business process effect (95), process effect mining (95), sequence database (90), effect mining (80), process design (80), sequential rule miner (79), semantic business process (63), background knowledge base (63), semantic execution trace (63), information system (60), post condition (60), process execution (60), software engineering (60), effect scenario (60), concurrent task (60), state update (50), process task (50), task assumption (50), sequential rule (50), next task (50), event log (50), context dependent effect (47)
Abstract	A large and growing body of work explores the use of semantic annotation of business process designs, but these annotation can be difficult and expensive to acquire. This paper presents a data-driven approach to mining these annotations (and specifically post-conditions) from event logs in process execution histories which describe both task execution events (typically contained in (em process logs)) and state update events (which we shall record in (em effect logs)). We present an empirical evaluation, which suggests that the approach provides generally reliable results.
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Authors						
first name	last name	email	country	affiliation	Web page	corresponding?
Metta	Santiputri	ms804@uowmail.edu.au	Australia	University of Wollongong	http://uow.edu.au	✓
Aditya	Ghose	aditya@uow.edu.au	Australia	University of Wollongong	http://www.uow.edu.au/~aditya	
Hoa Khanh	Dam	Hoa@uow.edu.au	Australia	University of Wollongong		
Xiong	Wen	xw926@uowmail.edu.au	Australia	University of Wollongong		
Chee-Fon	Chang	cfc@uow.edu.au	Australia	University of Wollongong		

Reviews

Review 1	
Overall evaluation	1: (weak accept)
Reviewer's confidence	1: (none)
Additional scores	
Technical Quality (including proper citations, e.g., to important historical literature)	3: (neutral)
Originality	3: (neutral)
Relevance to ER	3: (acceptable: conceptual modeling is an important part of the paper)
Quality of the Writing/Organization	4: (excellent)
Appropriate References	3: (acceptable)
Candidate for Best Paper/Best Student Paper award	2: (perhaps)
Appropriate for acceptance as a short paper, e.g., because it is somewhat preliminary	2: (perhaps)
Appropriate for invitation to extend this paper for a special issue of a journal	2: (perhaps)
Review	
Summarize the main contributions	The paper presents a data-driven approach to mining semantic annotations from event logs in process execution histories.
List three strengths of the paper	Well presented.
List three weaknesses of the paper	No comment.
Provide other comments to improve the quality of the paper	p. 8 - "For example, consider case 1 in Table 2. The first task, task T1 has timestamp t46 and the next task in the case, T2, has timestamp t73; therefore, we group task T1 with all effects in the effect log with the timestamp t1 until t28 ..." This explanation could be improved, as in Table 2 the first task T1 for caseID 1, has timestamp t1 - not t46, which does not appear in the table. In general, the paper is extremely well presented. Noticed a couple of spelling/syntax errors, see below: p. 1 - "approaches"[approaches] p. 7 - "Indeed, it is undesirable [undesirable] for our purposes to have the sequential rule miner [delete 'to'] to view the sequences hT; p; qi and hT; q; pi as being distinct."
Describe other references that should be provided	No comment.
Comment on the suitability/unsuitability of a short version of this paper	No comment.

Review 2	
Overall evaluation	1: (weak accept)
Reviewer's confidence	3: (medium)
Additional scores	
Technical Quality (including proper citations, e.g., to important historical literature)	3: (neutral)
Originality	3: (neutral)
Relevance to ER	3: (acceptable: conceptual modeling is an important part of the paper)
Quality of the Writing/Organization	3: (acceptable)
Appropriate References	3: (acceptable)
Candidate for Best Paper/Best Student Paper award	2: (perhaps)
Appropriate for acceptance as a short paper, e.g., because it is somewhat preliminary	3: (definitely)
Appropriate for invitation to extend this paper for a special issue of a journal	1: (not really)
Review	
Summarize the main contributions	This paper presents a framework for to mine semantic annotations for post-conditions of process models from event logs. The proposed approach integrates mining process logs to find sequential rules and incorporating this information to annotate business process models.
List three strengths of the paper	1. The paper is well-written, with examples to illustrate the various steps.
List three weaknesses of the paper	1. The results on real world dataset does not seem to validate the proposed approach.
Provide other comments to improve the quality of the paper	None.
Describe other references that should be provided	None.
Comment on the suitability/unsuitability of a short version of this paper	A short version of this work is appropriate.

Review 3	
Overall evaluation	2: (accept)
Reviewer's confidence	4: (high)
Additional scores	
Technical Quality (including proper citations, e.g., to important historical literature)	5: (accept)
Originality	5: (accept)
Relevance to ER	3: (acceptable: conceptual modeling is an important part of the paper)
Quality of the Writing/Organization	3: (acceptable)
Appropriate References	4: (excellent)
Candidate for Best Paper/Best Student Paper award	2: (perhaps)
Appropriate for acceptance as a short paper, e.g., because it is somewhat preliminary	2: (perhaps)
Appropriate for invitation to extend this paper for a special issue of a journal	2: (perhaps)
Review	
Summarize the main contributions	The authors propose a technique for mining post-conditions from event logs in process execution histories in order to create semantic annotations on business process designs.
List three strengths of the paper	The reasoning seems sound. The paper is not hard to read (though one needs to be a domain expert to really be able to understand the examples and discussion well). Related work is well documented, and the authors provide clear context for their work.
List three weaknesses of the paper	There are some typos and grammatical issues (see my extensive list below), but these are easily fixable. The paper will be interesting to a smallish subset of the conceptual modeling community. The authors omit a lot of details for space considerations. It would be especially helpful to see more details of the validation experiment. But there just isn't much space in a conference paper format.

Provide other comments to improve the quality of the paper	<p>Abstract: "these annotation" --> "these annotations" "which we shall record" --> "which we record"</p> <p>Section 1: Sort your citation blocks numerically. "approaches" --> "approaches" "only the process or service model" --> "the process or service model alone" "ambit" --> "scope" "upto" --> "up to" Your paragraphs seem fairly long. Should you refactor them? "significant investments" --> "significant investment" "if there was an" --> "if there were an" "we shall refer to" --> "we refer to" (throughout the paper -- watch out for "shall" and "will") "timestamped" --> "time-stamped" "state change events" --> "state-change events" (always hyphenate a phrase like this) "As we shall show," --> "As we show," "determine if the mined" --> "determine whether the mined" (too many "if's") Use a proper em-dash (--- in LaTeX) instead of a single hyphen throughout the paper.</p> <p>Section 2: "effects which can be" --> "effects that can be" No need for parentheses on "(as in [10] and [16])". Try to avoid parenthetic comments. You're using them a lot. "defined below" --> "defined below." "consistent, effectively" --> "consistently effective" (Note that you've not maintained full parallelism here. You might want to say "effectively exist the statement that ...") "there not exists" --> "there does not exist" Note the long expression that spills over into the margin. Please correct. Be careful about setting names in math mode. They often look odd because character kerning is off in math mode. So $\\$TaskID\\$ or $\\$CaseID\\$ would be better written \emph{TaskID} or \emph{CaseID}. "we will find it" --> "it is"</p> <p>Section 3: Use commas to punctuate the numbered list: "(1) ..., (2) ..., (3) ..., and (4)" Again, watch out for too many parenthetic statements. If the comments are important to write, incorporate them into the regular sentence. Some parenthetic comments are fine, but too many distract the reader from the main ideas you're expressing. "to obtain joined table" --> "to obtain a joined table" "permit any of these to be plugged-in in a modular fashion." --> "allow the use of any of these." The item "(2) Settings ..." is an incomplete sentence because of the way you've written it. I'd rewrite this paragraph. Maybe first identify the two cases, and then explain what they are. "and worth" --> "and is worth" Again, don't let your text spill into the margin (this happens in several places in the paper). "each ... pair represent" --> "each ... pair represents" Fix $\\$e_{ij}\\$; should be $\\$e_{ij}\\$. "in a case since it does not" --> "in case it does not" "end of process log" --> "end-of-process log" (? Or "end of the process log"? Or "last record in the process log?") "have a prior information" --> "have prior information" The paragraph starting with "We then apply the CMRules algorithm," could be made more clear if you depended less on dashes between phrases. Write regular sentences. "post processing" --> "post-processing" Perhaps set spaces between elements in the long T_1, \dots, T_p expression so LaTeX can split the formula across two lines. Either that or center the formula on a line by itself. "to refer to only those" --> "to refer only to those"</p> <p>Section 4: "but by the end of the log" --> "but rather by the end of the log"</p> <p>Section 5: "process designer in" --> "process designers in" (Note: too many occurrences of "process" in this sentence) "into business process model" --> "into business process models" "that exploits" --> "that exploit" "The process mining algorithms" --> "Mining algorithms" And here's a case where em-dashes might help the readability: "Process mining algorithms--- ... ---extract the ..." Be sure to have spaces between words and citations everywhere (e.g. "algorithm[31]," should be "algorithm [31].") "support the business process modeling" --> "support business process modeling" The sentence "We use similar data source ..." isn't quite right. Maybe "We use data sources similar to those used in process mining ..."? Anyway, see if you can clarify this long sentence.</p> <p>References: Some of the references seem to be incomplete (e.g. [14]).</p>
Describe other references that should be provided	None
Comment on the suitability/unsuitability of a short version of this paper	The authors would have to cut even more to make this a short paper. The contribution of this paper may not be huge, but it is interesting enough to warrant a full paper, in my opinion.