

From: BPM 2020 bpm2020@easychair.org
Subject: BPM 2020 notification for paper 98
Date: 11 May 2020 at 11:16
To: Han van der Aa han.van.der.aa@hu-berlin.de

Dear Han van der Aa,

We have completed the review phase of BPM 2020. There is good and bad news for your paper. First, we regret to inform you that your paper

98 - Say It In Your Own Words: Defining Declarative Process Models Using Speech Recognition

could not be accepted in the main conference. However, it gives us pleasure to invite your paper to the BPM Forum.

We received 138 submissions, out of which 132 went into review. All of them went through a rigorous review process which involved at least three reviewers and one senior PC member. Out of all submissions, 27 papers have been accepted or conditionally accepted.

From the remaining papers, 19 papers have been invited to the BPM Forum. The intention of the forum is to host innovative research that has high potential for stimulating discussions, but does not yet fully meet the quality expectations of the main conference. Papers accepted for the BPM forum are published as a separate proceedings in Springer's series Lecture Notes in Business Information Processing (LNBIP). BPM forum papers will have an oral presentation slot during the conference programme.

The reviews for your submission are included below. It is expected that the final version of your paper will carefully take the comments raised by the reviewers into account. Please keep in mind that the camera-ready version of your paper must be 16 pages long (including title+abstract, references, and appendices if any). When preparing the camera-ready copy of your paper, please make sure you have taken into account the Open Science Principles included in the call for papers:
<https://congreso.us.es/bpm2020/calls/research/>

The final deadline for submitting the camera-ready copy is *15 June*. By 1 June, we will send you a separate email with instructions on how to submit the camera-ready version of your revised paper.

Due to the COVID pandemic, the conference will be held fully online. We intend to make attendance at the conference free of charge; however, all participants will be requested to register.

In order to cover the costs of the conference organization, a "paper presentation fee" must be paid for every paper to be presented at the conference. This fee will be in the order of 120-220 euros (exact amount TBA). It must be paid once per paper, regardless of how many authors the paper has. If you happen to be an author of multiple papers to be presented at the conference, workshops, or "co-located" events, you will have to ensure that a paper registration fee is paid for each of those papers. Further details about the payment of this fee will be published on the conference website in early June. The fee is payable by **29 June**

Please note that paying the paper presentation fee does not mean that you are automatically registered to the conference. You should additionally register to the conference separately.

Other details about the conference arrangements will be published early June.

We look forward to seeing your paper presentation. Thanks again for submitting your research to BPM 2020.

Best regards,
Jörg Becker, and Marlon Dumas, Dirk Fahland, and Chiara Ghidini
BPM'2020 program committee chairs

SUBMISSION: 98

TITLE: Say It In Your Own Words: Defining Declarative Process Models Using Speech Recognition

----- METAREVIEW -----
Dear Authors,

This paper extends the framework ([1]) to allow for speech recognition of DECLARE constraints. It is validated over few users and insights are reported.

Strengths of the paper:

- Innovative application aimed at making declarative modeling easier through speech recognition
- Considers (in a way) the full DECLARE, i.e., also multi-perspective DECLARE.
- Very well written and clear

Weakness of the paper:

- Incremental contribution with respect to previous work.
- Unclear positioning, i.e., how actually incorporating speech recognition may improve DECLARE accessibility
- Evaluation is insufficient nor convincing, in various perspectives
- Issues with the current implementation in terms of speech recognition, as commented by one of the reviewers. This also confirms the open issues that seem to be still open with respect to the performance of speech recognition in reality.

It was not easy to make a decision for this paper. On the one hand, all three reviewers and the senior reviewer recognize the innovative value of the paper. On the other hand, the actual contribution with respect to previous work, the evaluation, and the

tool itself seem not to be up to the maturity level required for a conference like BPM. We strongly encourage authors to follow this work in order to improve the aforementioned weakness.

Since the work is innovative and has the potential of stimulating discussion at the conference, the paper would be a good candidate for the BPM Forum.

----- REVIEW 1 -----

SUBMISSION: 98

TITLE: Say It In Your Own Words: Defining Declarative Process Models Using Speech Recognition

AUTHORS: Han van der Aa, Karl Johannes Balder, Fabrizio Maria Maggi and Alexander Nolte

----- Overall evaluation -----

The paper presents an approach to declarative process definition based on spoken text. The idea is that constraints defining processes can be extracted from spoken definitions. The spoken text is mapped first to natural language and then to formal statements in the Declare language. The idea of the paper is interesting going more in the direction of a novel application rather than a theoretical contribution. The approach is implemented in a prototype and tested on 8 users with varying affinity with formal methods, Declare, and BPM in general. The results are encouraging, showing that the tool does provide support. The idea is that the experts can also review the translations of their text into declarations and refine the declarative statement.

The paper is well structured and the language flows well. Overall, I found the paper an interesting application paper.

As to the validation, I think the authors had a good initial setup, though many questions remain open. It would be interesting to know how often the users had to intervene to fix the declarative statements and how much far they were from the intended level.

A more far reaching question that I would like to see discussed is about the gap that needs to be filled to go from experts expressing textual statements, to domain experts not familiar with Declare just talking about their business process requirements. In other terms, how hard it is to go from freely expressed text about processes to formal statements. I can imagine this is a hard task, at the same time, if I look at the progress in personal assistants, I think that there is space for trying more ambitious routes to declarative definitions.

----- Availability of artifacts and datasets for reproducibility -----

Yes.

The scenario can be found at <https://git.io/Jv1Hn>

The help document can be found at <https://git.io/Jv1Hc>

The complete questionnaire can be found at <https://git.io/Jv1HC>

----- REVIEW 2 -----

SUBMISSION: 98

TITLE: Say It In Your Own Words: Defining Declarative Process Models Using Speech Recognition

AUTHORS: Han van der Aa, Karl Johannes Balder, Fabrizio Maria Maggi and Alexander Nolte

----- Overall evaluation -----

The main motivation of the paper is that declarative process models are in general difficult to specify. Declare, in particular, has a formal notation that is difficult to understand especially for domain experts. The authors present and evaluate a tool that is able to transform vocal statements into a set of DECLARE constraints. Additionally, a user can augment constraints with data and time conditions, can edit a model and can connect constraints.

Concerning constraints recognition, the paper extends the work presented in [1], which presents an automatic translation of (fewer template) constraints from natural language to Declare constraints. Beside extending the constraint types that can be recognised, the tool also supports the specification of activation, correlation and time conditions as speech inputs.

I think the contribution is interesting and valuable for the venue. The evaluation with users was performed by carefully selecting the participants, so to involve people with different levels of expertise in business process modelling, temporal logics and Declare process modelling. Unfortunately, the study involved 8 people only, two for each category. I think a more thorough evaluation will be needed. The presented one can be a first step to collect feedback and to improve the tool. Indeed, some improvements were performed after the evaluation.

Another aspect concerning the evaluation is that it would be interesting to collect feedback of participants when modelling a scenario they are familiar with. In this context, indeed, they would have some expectation on the constraints to be represented and could better judge their level of satisfaction with the tool. This drawback is acknowledged by the authors in the paper. They decided to propose a common scenario so as to be able to compare the results of the evaluation. One possibility could have been to ask the participants to model both a scenario of their choice and a common scenario.

The analysis of the results could definitely be improved. References to other papers are given but numbers (for instance those reported in Table 7) are not explained at all, which makes the paper not really self contained.

Overall, regardless of the highlighted problems, I found the paper valuable and the contribution interesting for the venue.

----- Availability of artifacts and datasets for reproducibility -----

At review time the material provided to the participants for the evaluation was not available ("page not found" error). Additionally, the available tool looked different than the screenshots provided in the paper (maybe the download refers to the previous version?) and I did not manage to make it work properly. As a result of some attempts, the tool was able to recognise one activity in a sentence that I pronounced and after that it was not able to recognise anything else. The same behaviour repeated after restarting the system (restarting the application only was not enough). When recognising the activity, no recognised sentence was shown in the text area at the top left corner.

----- REVIEW 3 -----

SUBMISSION: 98

TITLE: Say It In Your Own Words: Defining Declarative Process Models Using Speech Recognition

AUTHORS: Han van der Aa, Karl Johannes Balder, Fabrizio Maria Maggi and Alexander Nolte

----- Overall evaluation -----

This paper presents a formative evaluation of a declarative process modeling tool has been integrated with the Google Speech recognition API. The somewhat mixed results indicate the feasibility of the approach, but leave many questions open. The paper is well written and well structured and a working prototype has been provided.

While it is a great initiative to bring advances in speech recognition to improve the usability and efficiency of process modeling tools, one should more carefully evaluate the magnitude of such improvements and unfortunately both the title and several marketing claims found throughout the introduction and conclusion are not fully supported by the evidence included in the paper.

Let's start from the title: "Say it in your own words". While the "say it" part (thanks to Google's technology) is clearly achievable, the second part should be extended with "in your own words, as long as you follow our constraints that allow our NLP parser to match your sentence with one of the predefined declarative rules/constructs". This is also indicated by the study results where some users started to play a guessing game to figure out which "keywords" should have been used.

The fact that the user has to click on a separate button to "record constraint" or "record data condition, activation, correlation, time" is a big assumption on the level of domain knowledge about the target declarative process modeling language expected from a user.

Another puzzling result is the sentence that "all [eight] participants wrote sentences down before saying them out aloud". What is the point of using speech recognition if the sentences are already written down? Why not simply enter the written text into the constraint NLP parser and directly display the result?

Overall, it is not clear what is the problem the authors are trying to solve by introducing speech recognition, beyond trying to publish "the first test of the usability of speech recognition in BPM". As recognized within the design of Fig. 1, speech and GUI interaction (keyboard?) are two parallel input channel. It is not clear from this paper is to which extent speech is meant to replace the keyboard (which would be reasonable with mobile devices, as suggested by one of the study participants) or be used in a complementary way (some of the users suggested to avoid re-recording but simply editing the text to correct it). Transcription errors can also induce additional failure modes (where users say the correct sentence which is then incorrectly transcribed, thus leading to the translation to the wrong construct). What is the accuracy of speech recognition for these types of sentences? How is this significant usability problem mitigated?

Regarding the efficiency claims, the papers lacks a comparative evaluation between the performance/correctness of users directly typing natural language sentences and users saying them.

The core technical contribution of the paper (matching NL sentences with DECLARE constructs) is:

- 1) incremental with respect to previous work [1]
- 2) described in an informal way, with mostly examples.

While latest version of the tool supports 8 additional constraint templates, it also can accept "more flexible" inputs without "limiting the users too much". This fuzzy improvement makes it challenging to assess the magnitude of the delta contribution.

We also read that the problem is indeed challenging due to the ambiguity of natural language and then read examples which are laser focused on the not always consistent usage of specific words (Table 3)

must be sent -> Response(A,B)
can be sent -> Precedence(A,B)
must be sent first -> Precedence(B,A)

why not "can be sent first"?

One could argue that if users are expected to learn to utter such precise formulations, they might as well learn how to use the DECLARE language directly as the natural language formulation would not significantly raise the level of abstraction.

----- Availability of artifacts and datasets for reproducibility -----
a google drive link to download the software is included. Didn't try to run it.

