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Paper title:

Conversational Process Modeling: Can Generative AI Empower Domain Experts in Creating and Redesigning Process Models?

Keywords specific to the paper:

conversational process modeling, generative AI, chatbots, process descriptions, process models

Summary of the main contributions:

This research paper focuses on the potential implications of AI-powered chatbots within the realm of business process management (BPM), particularly focusing on their role in conversational process modeling. It underscores the critical importance of process models in comprehending business operations and enhancing overall performance, while also acknowledging the challenges inherent in their creation. The main goal of the research is to understand how chatbots could enhance or potentially replace traditional process modelers and analysts by engaging in conversational modeling with domain experts. It poses a series of research questions aimed at comprehending the utilization, existence, evaluation, and broader implications of conversational modeling methods and tools in the context of process modeling within BPM. To address these questions, the study adopts a research methodology based on design science research (DSR) principles. It systematically defines the problem space within BPM, leveraging insights from the BPM life cycle and existing datasets as foundational input knowledge. The research process unfolds through a series of structured phases, including literature review, taxonomy development, creation of test sets and key performance indicators (KPIs), training and generation of process models, quantitative and qualitative evaluations, and user surveys.Through this comprehensive approach, the study aims to generate valuable output knowledge. This includes defining the concept of conversational process modeling, delineating a taxonomy of application scenarios, generating process descriptions and models based on empirical datasets, establishing a robust set of KPIs for assessing model quality, compiling a catalog of prompts for chatbot interactions, and offering practical recommendations and

research directions based on the findings. Here are some tables of the first step, which is the extraction of tasks through KPIs.

Table 4: Set Similarity (**KPI2**): Comparison of tasks extracted by LLM with tasks extracted from BPMN Models. For each text a set of n tasks is extracted. Each text has 8–11 associated models from which again a set of m tasks can be extracted. Each set n is compared with all sets m, yielding a set of similarities which is averaged for similarity methods contextual (C) and non-contextual (NC)

LLM	C	NC	avg. # of tasks extracted from texts	avg. # of tasks extracted from models
GPT1	0.72	0.32	7.6	12
GPT2	0.71	0.32	6.7	12
GPT3	0.74	0.35	7.7	12
GPT3.5	0.73	0.36	8.5	12
GPT4	0.74	0.35	9.7	12

Table 5: Set Overlap (**KPI3**): Each task extracted from the text is compared (for each associated model) with task extracted from the model. If the similarity is bigger than a threshold, a task is deemed common, else it is deemed to only occur in either the model or the text.

LLM	similarity	common model	common chat	only in model	only in chat
GPT1	C	6.6	4.5	5.2	3.2
GPT1	NC	5.9	4	5.9	3.6
GPT2	C	6.2	4.1	5.6	2.6
GPT2	NC	5.6	3.6	6.2	3
GPT3	C	6.7	4.6	5.1	3
GPT3	NC	6.7	4.6	5.1	3
GPT3.5	C	7	4.7	4.9	3.8
GPT3.5	NC	6.5	4.4	5.4	4.1
GPT4	C	7.5	5.2	4.3	4.4
GPT4	NC	6.8	4.9	5.0	4.8

In conclusion to these results, the paper discusses the fact that CPM can be applied to various stages of the business process lifecycle, including process discovery, process analysis, process monitoring, process implementation, and process redesign. It enables the creation and improvement of models and process descriptions through iterative interaction between domain experts and chatbots. This interaction streamlines and simplifies process modeling projects, empowering domain experts and reducing dependence on process analysts or modelers.

The use of business process modeling has become crucial for managing organizational change and capturing software requirements. A tool like ConverMod can significantly impact business processes by automating tasks, particularly in acquiring as-is models, which typically consumes a significant portion of project time. Although human refinement may still be necessary, partial automation can yield substantial benefits. Future research should prioritize integrating chatbots' language capabilities with existing knowledge-based tools, rather than solely focusing on

training chatbots with specialized process modeling datasets. This integrative approach leverages the extensive modeling knowledge already encoded in existing tools and acknowledges the importance of semantics, which are well-defined in current tools. While certain tasks like model querying and refinement may require domain-specific solutions, machine learning-based chatbots can effectively support traditional, knowledge-based approaches in business process modeling, particularly in streamlining tasks like information gathering and basic model creation.

Supported by a software application? (If yes, provide more details)

Not supported by any software application