TOWARDS NEURAL REPRESENTATION OF BUSINESS PROCESS MODELING RULES BASED ON AND-LOGIC GATES

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Business process modeling is the core technique of the BPM (Business Process Management) methodology, assuming the bridge between business and information technology specialists. Business Process Model and Notation (BPMN) is one of the most popular and nowadays, in fact, the standard business process modeling notation used to capture, communicate, analyze, improve, and automate structured sequences of organization activities.

Business process modeling rules are formally based on measures and thresholds, including the following basic metrics of start events number (*SE*), end events number (*EE*), total nodes number (*N*), and inclusive-gateways number (*OR*) [1]:

$$x_1 = \begin{cases} 1, SE = 1 \\ 0 \end{cases}, x_2 = \begin{cases} 1, EE \geq 1 \\ 0 \end{cases}, x_3 = \begin{cases} 1, 1 \leq N \leq 31 \\ 0 \end{cases}, x_4 = \begin{cases} 1, OR = 0 \\ 0 \end{cases}.$$

These measures, originated from the source code metrics in software engineering domain, impact on the general complexity of business process models and, hence, their error probability [1]. Creating high-quality BPMN diagrams is vital for the successful project implementation, avoiding extra costs and efforts caused by occurring errors.

Thus, Fig. 1 demonstrates the proposed neural representation of business process modeling rules based on AND-logic gates.

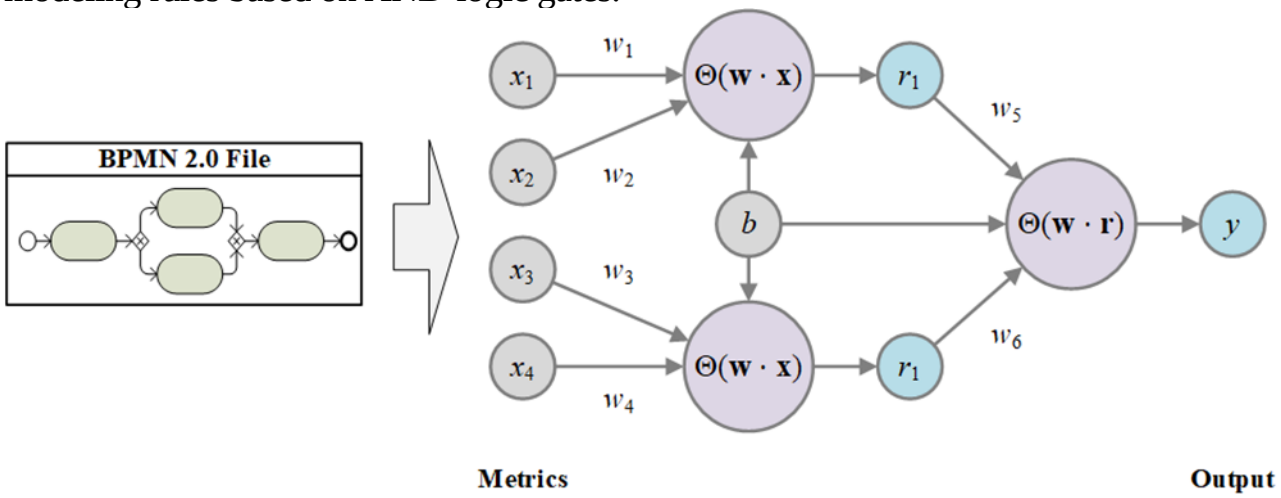

Figure 1 – The neural representation of BPMN 2.0 modeling rules based on AND-logic gates

The proposed computational system is a very basic simulation of a living being checking the BPMN diagram manually [2]. In the future, such a neural representation can be extended and implemented as a software for BPMN correctness checking.

References:

1. Mendling J. et al. Thresholds for error probability measures of business process models. *Journal of Systems and Software*, 2012. No. 85(5). P. 1188-1197.

2. Kopp A., Orlovskyi D. Towards Intelligent Technology for Error Detection and Quality Evaluation of Business Process Models. *IntelITSIS 2023*, 2023. Vol. 3373. P. 1-14.