

Facilitation of AI-supported generation of Source Code through Requirements Templates

In many cases, programmers re-write the same functions for common problems whose source code is available either in the same application repository or in other publicly available repositories. This leads to the wasted effort because developers re-engineer already implemented functionalities. Furthermore, freshly written code tends to be of lower quality when compared to tested code pieces probed several times in different execution environments. Instead of developing already developed functionalities, which leads to the introduction of common bugs and increased coding time, there is a great need to enable code reuse.

AI-enabled approaches tend to behave well when trying to identify repeating patterns. Therefore, to tackle the aforementioned issues, we aim to create a taxonomy to classify AI-based approaches for assisting software development with generating code. We will investigate how the existing approaches understand code, understand requirements, and how they try to relate them. Because the precision of AI-based approaches tends to be an issue when processing free form of input, we aim to design a framework to mitigate the drawbacks of the current approaches.

The core of the design framework will be a template that will allow software engineers to provide their requirements in a natural but constrained language, which will be used as input for the underlying model to be trained and tested. The main outcomes of this work will be an elaborate list of identified issues that are preventing the adoption of AI as an assistance tool in software development and an approach that can aid software development by generating solutions for already solved problems. This outcome is important for improving code quality and reducing effort by automatizing repetitive and non-creative tasks. For our dataset, we will examine common programming scenarios that developers face in the JAVA programming language. The dataset for AI training will be extracted from open-source repositories.