

Evaluating the Generation of Formal Specifications with GenAI

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Abstract: In this talk we will present preliminary results about automated generation of formal specifications using generative AI. Formal specifications are usually human-generated by highly trained software engineers. This is an important limitation in automated software analysis and verification, where the lack of formal specifications severely affects the industrial application of techniques requiring such specifications. A possible solution to this problem is then the generation of the specifications from the source code of the programs to be analyzed, with the aid of generative AI. This presents a number of open problems that we will study in the near future. Among these, the following two research questions arise:

1. If the source code contains bugs, are the bugs reflected on the generated specifications?
2. How do generated specifications compare from a correctness and readability point of view to human-generated specifications?

In the talk at the workshop we will provide (partial) answers to this research questions, which are the core of Lance's Master Thesis.