

Supervisor assessment of Bachelor's Thesis

Student: Šilling Petr

Title: Applying Code Change Patterns during Analysis of Program Equivalence (id 24037)

Supervisor: Malík Viktor, Ing., DITS FIT BUT

1. Assignment comments

The assignment was created and led in cooperation with Red Hat. I consider the assignment above average both in terms of complexity and scope. The student had to study concepts of static analysis of programs which are not part of the bachelor study at FIT. Moreover, he had to design and implement multiple original contributions, in particular (1) an encoding of code change patterns and (2) a method to automatically detect such patterns in industry-level code. He surpassed expectations in all of the assignment points.

2. Literature usage

The student's work with literature was exceptional for the bachelor level. He was able to examine and understand rather complex research papers and he performed a very extensive study of existing catalogues of software change patterns, where he found most of the sources by himself.

3. Assignment activity, consultation, communication

The student was very active throughout the entire year. The work was consulted on regular weekly meetings and every time he was able to present new progress, often coming with sophisticated and original ideas and solutions.

4. Assignment finalisation

The work was finished very well in advance and there was a lot of time to consult and improve both the implementation and the textual part. I was able to review the final text several times.

5. Publications, awards

The proposed method has been implemented as a part of an open-source tool DiffKemp. Currently, it is in the state of an open pull request. The implementation is of a very high quality and I expect it to be merged soon. Thanks to the involvement of Red Hat, the work has a potential to have an industry-level application.

Also, the work has been presented at the Excel@FIT'21 conference and I believe that it could be a good basis for further academic or industry research and that it could lead into a publication at a prestigious international venue.

6. Total assessment

excellent (A)

Overall, I suggest to rate this thesis by **grade A (excellent)**. This evaluation considers the high complexity of the assignment, the exceptional approach of the student, and the great quality of the results, all of which highly surpass the level of a bachelor study. Moreover, the proposed solution has a potential to have impact both in research and industry. With respect to these I suggest to consider additional awards for the thesis.

In Brno 25 May 2021

Malík Viktor, Ing.
supervisor