Brno University of Technology
Faculty of Information Technology

Department of Intelligent Systems (DITS) Academic year 2019/2020

Master's Thesis Specification

Student: **Krajňák Martin, Bc.**

Programme: Information Technology Field of study: Information Technology Security

Title: **Automated Generation of Tests for GNOME GUI Applications Using AT-SPI Metadata**

Category: Software analysis and testing

Assignment:

1. Get acquainted with assistive technologies providing accessibility for applications, in particular with AT-SPI.
2. Study methods for automatic test generation.
3. Design a method for analysing metadata produced by the AT-SPI framework and a method for automatic test generation based on this analysis.
4. Implement the proposed technique in a tool that will be able to generate tests for GNOME applications.
5. Test the created tool on at least 5 open-source GNOME applications.
6. Analyse the obtained results, compare the obtained test coverage with existing test suites, and discuss possible improvements of your tool for the future.

Recommended literature:

- Dadeau, F., Peureux, F., Legeard, B., Tissot, R., Julliand, J., Masson, P.-A., Bouquet, F.: Test Generation Using Symbolic Animation of Models. Model-Based Testing for Embedded Systems. CRC Press, 2011.
- Zander, J., Schieferdecker, I., Mosterman, P.J.: Model-Based Testing for Embedded Systems. CRC Press, 2017.
- Alexander, V., Benson, C., Cameron, B., Haneman, B., O'Briain, P., Snider, S.: GNOME Accessibility Developers Guide. GNOME Documentation Project, 2008.
- Laws, C., Haneman, B.: Accessible Document Navigation Using AT-SPI. Open A11y.org Accessibility Group, 2008.

Requirements for the semestral defence:

- The first two items and at least some work on the third item.

Detailed formal requirements can be found at https://www.fit.vut.cz/study/theses/

Supervisor:	**Vojnar Tomáš, prof. Ing., Ph.D.**
Consultant:	Pelka Tomáš, Ing., RedHatCZ
Head of Department:	Hanáček Petr, doc. Dr. Ing.
Beginning of work:	November 1, 2019
Submission deadline:	May 20, 2020
Approval date:	October 31, 2019