Automatic improvement of the location of web elements in automated test cases with the help of an FTPK tool

test-automation group

ELTE

April 2023

Outline

Automated tests

- improve quality
- quicker
- less expensive
- increased test coverage
- better accuracy

Motivation & Approach

Motivation:

- Maintaining automated test cases is time-consuming
- Test oracle problem

Our approach:

- GUI testing
- more robust
- relocalize the changed web element by its attributes
- correct behaviour or not
- adjust automated test cases

Test script repair

- ATER
- WATERFALL
- COLOR
- Erratum
- Similo

Robust script generators

- ROBULA
- ATA
- ATA-QW
- SIDEREAL
- Leotta's Multi-Locator (LML)

AI based

- Fuzzy-DEMATEL
- Neuro-Fuzzy Logic
- Dalia Alamleh's approach

Shortcomings

Handicaps of Similo:

- threshold value
- test oracle
- can be expensive
- not accurate weights

Methodology

- combine Similo & Dalia Alamleh's approach
- fix Similo weights by ELTE study
- run tests
- get failed tests
- classify failed tests by the not found web elem.
- run tests
- run DAA fuzzy logic to distinguish correct and incorrect code changes
- put aside the tests for incorrect code changes -¿ FAILED
- run Similo on one test from each group with (correct changes)
- rerun failed tests
- show results to human

Results

- 90% repair
- 120% performance increase
- 200% classification increase
- 160% accuracy increase

Discussion

- new tool (FTPK)
- ELTE
- We are awesome!

Q&A