BRNO UNIVERSITY OF TECHNOLOGY
FACULTY OF INFORMATION TECHNOLOGY

Bachelor's Thesis Assignment

145522

Institut:	Department of Intelligent Systems (UITS)
Student:	**Molnárová Veronika**
Programme:	Information Technology
Specialization:	Information Technology
Title:	**Efficient Reduction of Finite Automata**
Category:	Theoretical Computer Science
Academic year:	2022/23

Assignment:

1. Study techniques for reduction of (nondeterministic) finite automata, such as determinization and minimization, conversion into canonical residual automaton, simulation-based reduction, etc.
2. Develop new techniques for reducing finite automata based, e.g., on the use of SAT/QBF solvers, or develop improvements of current techniques.
3. Implement the developed techniques and experimentally compare them to existing techniques.

Literature:

- François Denis, Aurélien Lemay, Alain Terlutte:
  Residual Finite State Automata. Fundam. Informaticae 51(4): 339-368 (2002)
- Anthony W. Lin, Philipp Rümmer:
  Liveness of Randomised Parameterised Systems under Arbitrary Schedulers. CAV (2) 2016: 112-133
- Lucian Ilie, Gonzalo Navarro, Sheng Yu:
  On NFA Reductions. Theory Is Forever 2004: 112-124

Requirements for the semestral defence:
First item of the assignment.

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

Supervisor:	**Lengál Ondřej, Ing., Ph.D.**
Head of Department:	Hanáček Petr, doc. Dr. Ing.
Beginning of work:	1.11.2022
Submission deadline:	10.5.2023
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