

Bachelor's Thesis Assignment



153702

Institut: Department of Information Systems (DIFS)
Student: **Doležal Jáchym**
Programme: Information Technology
Title: **Human web browsing simulation**
Category: Web
Academic year: 2023/24

Assignment:

1. Study technologies for automated web crawling (Selenium, Puppeteer, WebdriverIO, etc.)
2. Learn how to simulate the behaviour of a real person visiting the web.
3. In consultation with the supervisor, design a tool to simulate a person's visit to the website. The resulting solution can be used for testing web servers or generating datasets of web requests. The tool will be configurable, with multiple human behaviour profiles to choose from, configure the frequency of requests, etc. Try to achieve as much similarity to organic traffic as possible.
4. Implement the proposed tool.
5. Experimentally verify the usability of the developed solution.
6. Evaluate the results obtained.

Literature:

- Kant, K., Tewari, V., & Iyer, R. (2002). Geist: A web traffic generation tool. In *Computer Performance Evaluation: Modelling Techniques and Tools: 12th International Conference, TOOLS 2002 London, UK, April 14–17, 2002 Proceedings 12* (pp. 227-232). Springer Berlin Heidelberg.
- Barford, P., & Crovella, M. (1998, June). Generating representative web workloads for network and server performance evaluation. In *Proceedings of the 1998 ACM SIGMETRICS joint international conference on Measurement and modeling of computer systems* (pp. 151-160).
- Han, X. P., Zhou, T., & Wang, B. H. (2008). Modeling human dynamics with adaptive interest. *New Journal of Physics*, 10(7), 073010.
- Matam, S., & Jain, J. (2017). *Pro Apache JMeter: web application performance testing*. Apress.
- Zhu, W., Gao, H., He, Z., Qin, J., & Han, B. (2019). A hybrid approach for recognizing web crawlers. In *Wireless Algorithms, Systems, and Applications: 14th International Conference, WASA 2019, Honolulu, HI, USA, June 24–26, 2019, Proceedings 14* (pp. 507-519). Springer International Publishing.

Requirements for the semestral defence:

Points 1 to 3

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

Supervisor: **Hranický Radek, Ing., Ph.D.**
Head of Department: Kolář Dušan, doc. Dr. Ing.
Beginning of work: 1.11.2023
Submission deadline: 9.5.2024
Approval date: 30.10.2023