

**Министерство науки и высшего образования Российской Федерации
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ АВТОНОМНОЕ ОБРАЗОВАТЕЛЬНОЕ
УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ
НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ ИТМО
ITMO University**

**ОТЗЫВ ЭКСПЕРТА НА ВЫПУСКНУЮ КВАЛИФИКАЦИОННУЮ РАБОТУ /
EXPERT'S REVIEW OF A GRADUATION THESIS**

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Группа / Group М34391

Факультет/институт/кластер / Faculty/Institute/Cluster факультет
информационных технологий и программирования

Квалификация / Degree level Бакалавр

Направление подготовки / Subject area 01.03.02 Прикладная математика и
информатика

Направленность (профиль) образовательной программы / Major Информатика и
программирование 2018

Специализация: информатика

Тема ВКР / Thesis topic Реализация TinkerPop инфраструктуры для WebGraph

Рецензент / Reviewer Zacchiroli Stefano, Télécom Paris, Polytechnic Institute of Paris,
France

Парижский политехнический институт, Франция / Télécom Paris, Polytechnic Institute
of Paris, France, Профессор / Full Professor, Доктор наук / HDR, Professor

РАЗДЕЛ I. Оценка ВКР/Assessment of the thesis

Критерии оценивания	Оценка
Соответствие содержания работы утвержденной теме ВКР / Degree to which the contents of the thesis correspond to its declared topic	отлично/excellent
Обоснование актуальности темы, корректность постановки цели и задач исследования/ Justification for the relevance of the topic; correctness of the set research goals and objectives	хорошо/good
Соответствие работы направлению, профилю и специализации подготовки / Degree to which the thesis corresponds to the student's subject area, major, and specialization	отлично/excellent
Корректность выбора использования методов исследования / Correctness of the chosen research methods	отлично/excellent
Качество, логика и полнота изложения представленных материалов / Quality, logic, and fullness with which the collected material is presented	не оценивается/not assessed (due to lack of familiarity with the thesis language)
Обоснованность положений, выносимых на защиту / Degree of justification for the assertions that are presented for defense	не оценивается/not assessed (due to lack of familiarity with the thesis language)
Научная и/или практическая значимость работы /	хорошо/good

Scientific and/or practical value of the research	
Внедрение результатов работы / Integration of the research findings	хорошо/good

РАЗДЕЛ II. Результирующая часть отзыва / The resulting part of the review

Вопросы / Questions:

1. How do you qualitatively estimate the impact of the slow-down between using Gremlin and performing native queries using WebGraph internals? Is 4x slower “good”, “bad”, or?
2. How does this approach compare to using state-of-the-art graph databases like Neo4j? Could a WebGraph back-end for Neo4j (or similar graph databases) be implemented in the same way you implemented it for TinkerPop?

Достоинства, недостатки, замечания/ Advantages, disadvantages, critique:

Достоинства/ Advantages: The student was really good at understanding the technological aspects of the problem: I quickly learned the internals of both Apache TinkerPop and WebGraph, obtaining a high degree of autonomy in bridging the two worlds.

He was also proactive in engaging, on the one side, with the thesis supervisor about domain-specific aspects he was not familiar with and, on the other side, with the TinkerPop community to discuss how to implement queries for the Software Heritage problem domain (queries that was, to some extent, unusual in style with respect to the usual Gremlin queries).

The student was also, after an initial explanation of how to conduct empirical experiments avoiding methodological pitfalls, entirely autonomous in developing benchmarking code (including all needed profiling options) and running it on the chosen use cases.

Недостатки, замечания/ Disadvantages, critique: Mainly due to the lack of time, during the thesis work we could not explore the application of the implemented TinkerPop ↔ WebGraph bridge to other large compressed graphs. This was not part of the initial plan, so it is not a shortcoming, but it would have been interesting to explore if other compressed graphs have use cases for more idiomatic TinkerPop queries. (On the other hand, it is rare to have at disposal properties for other large compressed graph, that usually are interesting only for their structure, e.g., the graph of the Web.)

Similarly, after realizing toward the end of the project that several Gremlin queries to address Software Heritage use cases are not idiomatic (and in general quite long), it would have been interesting to explore which extensions of the Gremlin DSL can be implemented to make writing Software Heritage-style queries shorter/easier for query authors. (This too was not part of the initial assignment and remains available as actionable future work)

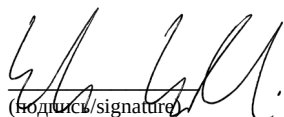
Заключение / Conclusion:

Итоговая оценка ВКР - Хорошо. / Final assessment of the thesis - good.

Заключение: Считаю, что данная выпускная квалификационная работа является

законченной работой - **да**, а её автор заслуживает присуждения квалификации Бакалавр - **да**. / **Conclusion:** I believe that the present graduation thesis is complete - **yes**, its author is deserving of being awarded a degree Бакалавр – **yes**.

Эксперт / Thesis expert


(подпись/signature)

Stefano Zacchioli
(Ф.И.О. / full name)

June 3, 2022

Обучающийся / Student


(подпись/signature)

Стародубцев Андрей Игоревич
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3 июня, 2022

Дата получения / Received on

_____, 2022

Секретарь ГЭК / Secretary of State Examination Board

(подпись/signature)

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