I. IDENTIFICATION DATA

Thesis title:	**Mapping the Internet — Modelling Entity Interactions in Complex Heterogeneous Networks**
Author's name:	**Šimon Mandlík**
Type of thesis :	
Faculty/Institute:	
Department:	Department of Computer Science
Thesis reviewer:	Lukáš Bajer
Reviewer's department:	Cisco Systems, Inc.

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment

How demanding was the assigned project?

The assignment of the thesis was clearly specified with requirements that correspond to a proper master thesis, including literature survey, theoretical work with some novel work from the student, implementation and finally experimental evaluation of the proposed method.

Fulfilment of assignment

How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.

The thesis not only fulfills the assignment properly, but goes notably beyond that. The experimental section is more extensive than I would expect as it provides three well-described and tested applications.

Methodology

Comment on the correctness of the approach and/or the solution methods.

The work presents overview of the state-of-the art knowledge in the Multiple Instance Learning, it brings a notable extension of this work and the evaluation in proper way. However, it can be more clearly stated that the contribution in the theoretical part (the hierarchical extension of the MIL framework) is not a completely novel in the thesis – this is completely valid and such contribution goes far beyond the scope of master thesis. It is properly stated in section 3.3 that the text is based on previous works, but it should be stated in the overview of the thesis in the Introduction, too.

Technical level

Is the thesis technically sound? How well did the student employ expertise in the field of his/her field of study? Does the student explain clearly what he/she has done?

The thesis is very well written with extensive context. The methods are clearly defined, experiments are properly set up and evaluated. My objection is, however, that the experiments are not easily reproducible. The thesis contains the source code of the MIL library as an attachment, but set-up of the experiments is not accessible.

Formal and language level, scope of thesis

Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?

No objection regarding this. Rather opposite: the thesis is substantially more extensive that I would expect, very understandable, with illustrative figures etc. The English is very well, too.

Selection of sources, citation correctness	

Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?

The work uses well-established citation standards, with plenty of related works. It properly cites previous work from which it uses some parts (Bc. Thesis, articles).

Additional commentary and evaluation (optional)

Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.

Student provided work of very high quality. It brings very good explanations of the methods and formalisms, it properly evaluates the proposed extension of the HMill framework for graphs on three real-world datasets from Cybersecurity. As I mentioned in section *Technical level*, I would appreciate experiments source code (for example with mock data) if it would be possible (and if I did not missed its existence). Student provided excellent work and I recommend that for being defended.

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

Summarize your opinion on the thesis and explain your final grading. Pose questions that should be answered during the presentation and defense of the student's work.

The grade that I award for the thesis is

Date:

Signature: