Czech Technical University in Prague, Faculty of Biomedical Engineering
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Study program „Biomedical and Clinical Technology"
Study branch „ Biomedical Engineering"

SUPERVISOR REVIEW OF DIPLOMA THESIS (MASTER PROJECT THESIS)

student: John LaMaster
with title: Evaluation of the MR-tagged images with respect to the viability of the heart based on the strain analysis

Evaluation of the diploma thesis reaches the following level:

	Evaluation criteria of thesis	Points
1.	Access of the student to the solving task (preparedness, initiative, work approach and student autonomy). (0 – 30)* *Full points can be awarded to a student who approached the diploma thesis long-term, systematic, independent and with a clear vision of the solution. Supervisor of diploma thesis can decreases of the related points from the case of low student activities or piecemeal work, which was reflected in non-conceptual search and easiest solution.*	25
2.	The method and level of processing task. (0 – 30)* *Supervisor assesses a creative approach and ability to seek professional literary sources. Full points can be awarded if the thesis has a high level of the theoretical background, which is in accordance with the needs of the practical part. In case of insufficient development of the theoretical background the relevant points are reduced up to 15 points. The reason for the reduction in the overall evaluation is also insufficient development of the application part.*	20
3.	Range of experimental work (SW, HW), applied knowledge, publications and other activities, including awards in connection with the theme of the work. (0 – 30)* *The maximum number of points can be given a thesis that is suitable for publication. This aspect is particularly in terms of importance to enhance the theoretical knowledge and practical importance. Especially positively evaluated is a model, software product as well as technical implementation. For minor methodological flaws, the assessment can be reduced by up to 5 points. Inconsistency of treatment with theoretical and unclear or not fully professional approach has led to a reduction of at least 15 points. Further downgrades may be granted for the lack of discussion and relevant conclusions. A total of 30 points for a very complex and error-free work, including other activities such as participation in scientific-research project or grant, active participation in the creation of publications, patents and industrial designs can be applied.*	20
4.	Formalities and finish thesis (level writing, markings structure of the text, graphs, tables, citations in the text, bibliography, etc.). (0 – 10)* *Supervisor evaluates formal requirements in terms of compliance with the rules of writing, theses attributes, i.e. text formatting, structure of the work, a list of references, availability thesis charts and tables, the method of citation. The total points can be reduced for non-compliance of rules by the maximum score of 2 points for each attribute disrespect. Also, for the occurrence of grammatical errors, typos and improper terminology and stylistics is reduced by 2-4 rating points as well. Within the thesis should appear only standard terminology, especially in the English language (must evaluate the ability to express the technical language - 2 points), graphs are formed according to the principles (see tolerance and the influence of statistical processing - 2 points) for graphs and tables are appropriate legends and everything is legible (2 points) and there are followed by the citation rules ISO690 and ISO690-2 (2 point).*	8
5.	**Total points**	73

** In case of further comments carry on the overleaf*

Proposal issues for defence (optional)

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3.
4.

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The overall assessment of the level elaboration of the diploma thesis:

A (excellent)	B (very good)	C (good)	D (satisfactory)	E (sufficient)	F (failed)
100-90 points	89-80 points	79-70 points	69-60 points	59-50 points	< 50 points
□**	□**	X**	□**	□**	□**

** - check the appropriate classification level, in the case of evaluation of F (fail), please provide detailed comments

Diploma thesis was evaluated at classification level **(C/good..)** mentioned above.

Comments (optional with exception of classification level „F")

Thesis topic with title Evaluation of the MR-tagged images with respect to the viability of the heart based on the strain analysis is part of the project, that is conducted at University Hospital Motol within the cardiology department headed by Mrs. Assoc. Prof. Ridelbach and concerns with the resynchronization therapy. The thesis topic is only a small part of the project and there was used a simplified approach especially in terms of the concept of heart viability because of from the medical point of view is much more complex. From the point of view of this thesis the mentioned heart viability assessment was associated with the so-called strain parameter, which is only one from a set of possible indicators related to the viability of the heart. Custom solutions of this thesis therefore focused on the processing of MR images with relatively small size using a protocol SPAMM, during which there is applied additional magnetic field with appropriate modulation, which is then included within the display of tissue structures. Due to the additional grid there is possible to evaluate the deformation of the heart. Unfortunately under this protocol there is available only a very poor quality of the images obtained with low value of S/N ratio and also the gradual disappearance of the auxiliary signal field. This was also a very substantial problem within the thesis processing. For the own solution has been used the so called short axis (SA) projection or display of the heart. Student had for the whole solution of the thesis relatively small amout of time and about eight months since the first year of studies at the RWTH Aachen. During those eight months also had health problems as well. But student solved all tasks in time and with with considerable effort to obtain reasonable solution. In terms of methodology, the problem was solved and proceeded by student correctly. Assignment of the thesis was fulfilled. Student verified the functionality of the algorithm on synthetic data as well. However, despite the small number of real test images, there is the positive result that the proposed method can distinguish pathological from physiological cases.

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Signature: .....
Date: .....9.9.2016.....