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: Luis Díaz
with title: Extraction of Electrical Properties of Strokes from Magnetic Resonance Scans – Testing on Simplified Head Phantoms

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.*	30
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.*	28
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.*	9
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).*	28
5.	**Total points**	**95**

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

Proposal issues for defence (optional)

1.
2.
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
□**	□**	□**	□**	□**	□**

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

Diploma thesis was evaluated at classification level **A** mentioned above.

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

In his work the student devoted himself to the reconstruction of dielectrical parameters of biological tissues from MRI images. Student first implemented suitable mathematical relationships in MATLAB and verified them on synthetic data from a numerical simulator Sim4Life. There distribution of RF magnetic fields inside the anatomically realistic human head model was computed as the head model was virtually exposed from a birdcage coil model.

Furthermore, he created a phantom of three different tissues of the head and in collaboration with Assoc. Prof. Tintera MRI images were acquired.

He modified the mathematical relationships to be applicable on the measured data.

It has been shown that a phase correction and application of noise reduction techniques are necessary to obtain the right values of dielectric properties. These steps were not planned ahead and caused delay in Master Thesis submission. Student has made a lot of effort and successfully solved the two problems.

The results of the thesis are accepted for publication at the international conference Progress in Electromagnetics Research Symposium. I suggest grade A.

Name and Surname incl. Degrees: Assoc. Prof. Dr.-Ing. Jan Vrba, M.Sc. Signature: .....

Institution: FBME, CTU in Prague Date: 12. 9. 2017.....

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