I. IDENTIFICATION DATA

Title of the thesis:	**Control strategies for BLDC motors**
Name of the author:	**Shawn Moses Cardozo**
Thesis type:	Master
Faculty/Department:	Faculty of Mechanical Engineering (FME)
Department/Institute:	Department of Instrumentation and Control Engineering
Opponent:	Ing. Zdeněk Novák
Opponent institute:	FME, CTU, Department of Instrumentation and Control Engineering

II. ASSESSMENT OF INDIVIDUAL CRITERIONS

Assignment	Demanding
Assessment of the final Master's thesis assignment demands.	

I consider the assignment of the thesis demanding, since it requires a high proportion of theory, which is not part of a student's study plan.

Final project assignment fulfilment	Fulfilled
Consider if the final project met the placing. If not, indicate which parts have not been met or do not meet the completion criteria.	

All goals have been met.

Student's active work and independence	Excellent
Consider whether the student was active during the solution, whether he / she had adhered to the agreed deadlines, whether he / she had consulted the solution on an ongoing basis and whether he / she was sufficiently prepared for the consultation. Assess the student's ability to work independently.	

During the diploma thesis, the student consulted regularly. He was actively looking for solutions to individual problems. His problem-solving independence was very good.

Professional level	Excellent
Assess the professional level of the Master's thesis, use of gained knowledge and use of professional literature.	

I consider professional aspects of the thesis well done. This is mainly due to the student's work on a topic, for which a theory is not available as a part of his study plan. Despite this shortcoming, the student was able to work very well on the chosen topic and successfully complete it, which I consider an important element for the master student.

Formal level and the scope of the work	Very good
Assess the formal quality of the text, figures and the typography and language level of the work.	

The formal quality of the text is very good. Since the student is not a native English speaker, there is a small number of cases where a native speaker would most probably express his or her ideas in a different way. Most of the figures have a good quality, even though the placement is not always ideal. However, the reason is mainly due to the topic of the thesis, which have a high percentage of expected simulation results and block diagrams. The student also made a great effort to improve their quality after the first reading of the thesis. Equations are correctly numbered.

Selection of sources and accuracy of citations	Excellent
Assess the student's use of study materials for the Final thesis topic. Characterize using the all relevant sources. Verify if all taken elements are clearly distinguished from student's own results and if there is no violation of citation ethics.	

The student used enough study resources to complete the thesis. I consider all sources as relevant to his work and formally correctly cited. The actual own results were visually distinguished from the relevant literature.

Any other comments

Assess the quality level of reached results, publication activity and theoretical or experimental skills.

I highly appreciate the student's ability to work independently on the selected topic. In addition, he was able to learn the basics of LabVIEW programming in a very short time and to transfer the results of the simulation from Matlab to LabVIEW while evaluating the selected results in practice. I am a little skeptical to chapter 4.6.1 Optimization of Power supply, which needs to be evaluated with a real hardware to show meaningful results. Solutions to power problems are already available on the market. However, I appreciate student's effort to come up with own solution.

III. OVERALL QUALIFICATION AND ASSESMENT

Summarize the main aspects affecting your overall assessment.

All goals of the thesis have been met. I consider professional aspects of the thesis well done. Despite the shortcoming, that high percentage of the selected topic is not part of the study plan, the student was able to work very well and successfully complete the thesis. I highly appreciate the student's ability to work independently. In addition, he was able to learn the basics of LabVIEW programming in a very short time and to transfer the results of the simulation from Matlab to LabVIEW while evaluating the selected results in practice.

I assess the submitted Master thesis as **Excellent**

Date: 17.6.2019   Signature:

Questions:

1) Are you familiar with any testing equipment usable for Matlab environment without a necessity of switching to other programming language in order to evaluate practical results? Do you know if they are available with FPGA technology?

2) The automotive industry has high standards for quality and efficiency. In electric car, method of utilization of motor currents has a big impact on the drive efficiency and performance. Based on your results, can you determine whether any control strategy has promising results in terms of overall efficiency or some advantage with / without a position sensor?

Used scales (in order of appearance):

Very demanding	Fulfilled	Excellent	Excellent – A
Demanding	Fulfilled with minor objections	A right one	Very good – B
Common	Fulfilled with major objections	Suitable in part	Good – C
Easy	Not fulfilled	Incorrectly chosen	Satisfactory – D
Too easy			Sufficient – E
			Failed - F