THESIS REVIEWER'S REPORT

I. IDENTIFICATION DATA

Thesis title:	Software support for parallel ADAS applications on pre-development version of the Aurix TC4 microcontroller
Author's name:	Lukáš Bielesch
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Lukáš Bielesch
Thesis reviewer:	Ing. Michal Sojka, Ph.D.
Reviewer's department:	ČVUT, CIIRC

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	**challenging**
How demanding was the assigned project?	
I consider the project as challenging, because of its wide scope: from development of low-level code in the BSP up to code generation in Matlab/Simulink and training of neural networks.	

Fulfilment of assignment	**fulfilled**
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.	
All points of the assignment were completed. The student hoped that he will be able to complete even more points beyond the assignment and create an integrated application demonstrating all developed components together, but was not possible due to uncontrollable external factors. Nevertheless, I consider the body of completed work outstanding and more than sufficient for the Master's thesis.	

Methodology	**outstanding**
Comment on the correctness of the approach and/or the solution methods.	
The used methodology is correct. The student starts from development of basic low-level software (BSP) needed to run C code. On top of that, he builds support for communication with the parallel accelerator PPU and presents small programs demonstrating functionality of the developed components. Finally simple ADAS applications using Kalman filter and a neural network (running on PPU) were developed and demonstrated.	

Technical level	**A - excellent.**
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?	
I have no substantial objections to the technical level. I have few clarifying questions, though (see below).	

Formal and language level, scope of thesis	**A - excellent.**
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?	
The thesis is written in good and understandable English. The main text consist of over 60 pages with many illustrative figures and another 20 pages of appendixes. The number of typos and grammatical errors is very low. A few references don't mention whether the target is number corresponds to section or figure or something else. Graphical design is good (LaTeX template) with few minor typographic deficiencies (hyphens instead of dashes, inch characters instead of quotes).	

Selection of sources, citation correctness	**A - excellent.**
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 contains a lot of references. These are used correctly. Citations meet the standards.	

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.
Overall, the thesis presents a big amount of work, clearly showing the student's capability of conducting engineering work. I'd especially emphasize the fact that student worked with early hardware prototypes and despite presence of bugs in there, ho was able to overcome most of them and deliver functional result as much as the project allowed.

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.

I'm more than satisfied with the thesis. It represents substantial amount of work, which is well presented in the text. As noted above, I have a few clarifying questions:

1. In Section 3.5, the author describes a developed "Mutex module". Mutex can be implemented in many ways, differing in implementation of waiting for locked mutex. One way is integration with (RT)OS scheduler (which was probably not used), another is so called spinlock, which uses busy-waiting. Can you clarify which method was used?

2. Similar to the previous question – inter-processor communication between TriCores and PPU (Section 6.1) uses notifications, inter-processor interrupts and can block TriCore CPUs. How is the blocking implemented? Is it busy-waiting or waiting for interrupts in a low-power CPU mode or something else?

The grade that I award for the thesis is A - excellent.

Date: **3.6.2022**   Signature: