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ČESKÉ VYSOKÉ
UČENÍ TECHNICKÉ
V PRAZE

I. IDENTIFICATION DATA

Thesis name:	Click herOpen Hardware Motion Controller for Rapid Prototyping with NuttX RTOSe to enter text.
Author's name:	Štěpán Pressl
Type of thesis :	bachelor
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Control Engineering
Thesis reviewer:	Roberto Bucher
Reviewer's department:	extern

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment — challenging

Evaluation of thesis difficulty of assignment.

The project contains a lot of elements related to control theory. Knowledge in Rapid Prototyping and Linux are required.

Satisfaction of assignment — fulfilled

Assess that handed thesis meets assignment. Present points of assignment that fell short or were extended. Try to assess importance, impact or cause of each shortcoming.

The requirements of the project are covered. The theoretical part is complete included the description of the tool used (pysimCoder) described in a simple and complete form. The descriptions of the motors and sensors is well made and complete.

Descriptions of the NuttX OS, pysimCoder, motors and actuators are complete and demonstrate that the student has deep analyzed all these environments.

Method of conception — correct

Assess that student has chosen correct approach or solution methods.

The solution is well presented. Some parts can be more clearly described by using a better name of some variables. For example, H(s) is used both for plant and controller (as in formula 3.6). It is better to use for example G(s) (or H(s) for the plant and C(s) for the PID controller.

The derivative part of the controller is not realizable in continuous time as simple derivative, but should realized as Lead controller (not proper transfer function).

In the schematic of Figures 8.3 and 8.5 it is better to use a discrete integrator instead of the continuous one: this will reduce the computational time at each sampling period, with better timing (but I'm not sure that this solves the problem with shorter sampling times).

Better sampling can be reached using for example "timer hook" provided by NuttX and described here:
https://cwiki.apache.org/confluence/display/NUTTX/Short+Time+Delays

This can be implemented with few modifications in NuttX and pysimCoder, in order to obtain a better behavior.

Technical level — B - very good

Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.

The HW part is well realized and discussed. This part in my opinion can be also as "A" judged. The difficulty of the application, however, is less than other theses I have analyzed in the past.

Formal and language level, scope of thesis — A - excellent

Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.

The documentation is complete and well readable. The student demonstrates an excellent command of the English language.

All the technical terms are correct and used appropriately.

Selection of sources, citation correctness	A - excellent.

Present your opinion to student's activity when obtaining and using study materials for thesis creation. Characterize selection of sources. Assess that student used all relevant sources. Verify that all used elements are correctly distinguished from own results and thoughts. Assess that citation ethics has not been breached and that all bibliographic citations are complete and in accordance with citation convention and standards.

All the sources are presented and well documented.

Additional commentary and evaluation

Present your opinion to achieved primary goals of thesis, e.g. level of theoretical results, level and functionality of technical or software conception, publication performance, experimental dexterity etc.

Despite some very little points, the student provides a good and complete thesis. Compared to other theses that I have already reviewed in the past, I've proposed in this case a "B" evaluation.

III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

Summarize thesis aspects that swayed your final evaluation. Please present apt questions which student should answer during defense.

The author proves his skills in particular in the HW part. I evaluate handed thesis with classification grade

B - very good.

only because, compared to other theses in the past, I see not the same level in finding new and original solutions for the proposed problem.

By the defense of the these project, the student can demonstrate to be eventually graded as A.

Date: 31.5.2024   Signature: