TECHNICKÁ UNIVERZITA V LIBERCI
Fakulta mechatroniky, informatiky
a mezioborových studií

DIPLOMA THESIS EVALUATION
SUPERVISOR EVALUATION

Author name: Aleksandr FEDOROV
Supervisor: Doc. Mgr. Ing. Václav Záda, CSc.
Thesis title: Robot Dynamics and Control on Exponential Matrices

A. Abstract quality, keywords matching . . . . Very good minus (2-)

B. Research scope and processing . . . . Very good minus (2-)

C. Level of theoretical part . . . . Very good minus (2-)

D. Appropriateness of the methods . . . . Excellent minus (1-)

E. Results elaboration and discussion . . . . Very good minus (2-)

F. Students own contribution . . . . Very good minus (2-)

G. The conclusion statement . . . . Very good minus (2-)

H. Fulfillment of Thesis tasks (goals) . . . . Fulfiled

I. Structure, correctness and fulness of references . . . . Excellent minus (1-)

J. Typographical and language level . . . . Very good (2)

K. Formal quality . . . . Excellent minus (1-)
   (text structure, chapters order, clarity of illustrations)

L. Student access (independence, activity etc.) . . . . Very good (2)

Comments, remarks

1. Mr. Fedorov copied figures 2.1, 2.2, 2.3, . . . and others, from the book [3] without mentioning the source.
2. The matrix S on p. 13 does not correspond to the formula S(a)p = a x p on the page 14 - hence there is used a different designation. The same error is on page 24, the formula (2.28). But, on the other pages the student Fedorov uses the same designation as in [3] - confusion.
3. The equations (2.11), (2.13) are not correct.
4. The subchapter 2.10 on pages 28-29 is too short.
5. In vectors (3.35) - (3.37) missing commas.
6. The inertia matrices on pages 37-38 are simpified. The real ones are non-diagonal.
7. The components of the matrix (4.80) was not necessary to specify.
8. The first term on the right side of (5.19) gives a positive feedback.
9. I have not found keywords.

TECHNICAL UNIVERSITY OF LIBEREC | FMIMS | Studentská 1402/2 | 461 17 Liberec 1
tel.: +420 485 353 429 | www.fm.tul.cz | DIČ: CZ 467 47 885 |

1/2

TECHNICKÁ UNIVERZITA V LIBERCI
Fakulta mechatroniky, informatiky
a mezioborových studií

Overall assessment:

Mr. A. Fedorov somewhat overestimated his own ability and he chose rather difficult topic for his diploma thesis. Therefore, his study and writing a thesis took two years. Fortunately, his thesis is sufficiently acceptable, although it has many shortcomings. Some of them have been discussed in comments. It is a pity that the student simulates only the simplest task - position control of robot. The tracking control problem is omitted. Achieving results representing advantages and disadvantages of exponential matrix methods are to be expected. The diploma thesis was fulfilled.

Questions for the defense:

1. How there are compensated frictions in robot dynamic equations.
2. Explain a tracking control algorithm for robot manipulators.
3. Explain the difference between SISO and MIMO systems an compare it with the text on p. 56.

Overall classification:

Work meets the Master degree requirements and therefore I recommend it for defense

I suggest to classify this work by grade Very good (2)

In Liberec, Czech Republic

date 28. 5.2015

By signing I certify that I am not in any personal relationship with the author of the thesis

Supervisor signature