

**I. IDENTIFICATION DATA**

<b>Thesis name:</b>	<b>Naturalistic Control of Eyes of a Humanoid Robot duringan Interactive Game</b>
<b>Author's name:</b>	<b>Daria Mikhaylovskaya</b>
<b>Type of thesis :</b>	bachelor
<b>Faculty/Institute:</b>	Faculty of Electrical Engineering (FEE)
<b>Department:</b>	Department of Cybernetics
<b>Thesis reviewer:</b>	Hagen Lehmann
<b>Reviewer's department:</b>	Dipartimento di Scienze umane e sociali Università di Bergamo Piazzale Sant'Agostino, 2 24124 Bergamo (BG) Italia

**II. EVALUATION OF INDIVIDUAL CRITERIA**

<b>Assignment</b> <i>Evaluation of thesis difficulty of assignment.</i>	<b>extraordinarily challenging</b>
Naturalistic Human-Robot Interaction is a complex goal to be achieved. In her thesis the student set out to familiarize herself with the iCub humanoid robot and its vision system, and to create eye movements that are perceived as naturalistic by the human user. Additionally she aimed at improving interaction safety between the human user and the robot in close physical proximity. In order to achieve these goals the student needed develop not only a profound technical knowledge of the robotic system used, but also an in depth knowledge of the field of HRI which includes also psychological aspects of human interaction dynamics. Based on this the assignment can be considered extraordinarily challenging, specifically within the framework of a bachelor thesis.	
<b>Satisfaction of assignment</b> <i>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.</i>	<b>fulfilled with minor objections</b>
The goals set in the guidelines of the thesis can be considered fulfilled. There are minor objections for both major goals, safety and naturalistic interaction, which in both cases can be ascribed to the limits of the available technology. In general the student achieved all 5 points set in the guidelines. For Point 4 a different game was used, however the game described can be considered to have the same affordances, from an social interaction perspective, as a card game.	
<b>Method of conception</b> <i>Assess that student has chosen correct approach or solution methods.</i>	<b>outstanding</b>
The thesis shows that the student approached the challenges of the work with a strict methodological approach and used creative solutions when necessary.	
<b>Technical level</b> <i>Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.</i>	<b>A - excellent.</b>
Based on the thesis and the technical solutions found, the student reached an excellent level of understanding necessary for a successful completion of the specificities of the thesis.	
<b>Formal and language level, scope of thesis</b> <i>Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.</i>	<b>A - excellent.</b>
The thesis is very well written and structured. It is easy to follow and includes all necessary information. The information is presented in a comprehensive and clear way.	

**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.*

The bibliography of the thesis is exhaustive and well researched. The student cited the necessary literature in a correct way.

**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.*

The work described in the thesis is relevant and timely. With an extension of the theoretical part, it would merit publication.

The student identified very well the limitations of the work and appears to have an idea on improvement and future work.

**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 clarity of the presentation, the technical solutions, which I could observe also in the video footage provided, and the evaluation results convinced me of my final evaluation.

Questions:

Do you think focusing on facial movements, like eye gaze or blinking, will be important for future robot applications, e.g. in domestic environments? Do you think projected faces could be a better solution compared to mechanical features, like e.g. iCub's eyes? Why or why not?

What do you think are the major ethical issues connected to the introduction of robots in mixed human-robot environments?

I evaluate handed thesis with classification grade **A - excellent.**

Date: **4.6.2024**

Signature:

