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Faculty of Electrical Engineering and Informatics
Engineering Programs in English

B.Sc. COURSE

Department of Control Engineering & Information Technology

FINAL PROJECT

*of Stephen Michael WHITAKER
candidate for the B.Sc. degree
in Electrical Engineering*

Title of the final project: *Mobile Target Following by a PIONEER
Mobile Robot using Microsoft Robotics
Developer Studio*

Department setting the project: *Department of Control Engineering
and Information Technology*

Supervisor at the Department: *Dr. Bálint KISS
associate professor*

**Supervisor at the Royal Military Academy:
(Brussels, Belgium):** *Dr. Eric COLON*

Deadline of submission: *June 4, 2010*

Subjects of the Final Examination:

- 1. Electronics Technology*
- 2. Control Engineering*

Task was issued on *February 15, 2010*

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Detailed description of the project:

The work builds upon background knowledge available in the UGV Center of the Royal Military Academy. The development is based on Microsoft Robotics Developer Studio (MRDS) that provides original control architecture and tools for developing advanced applications.

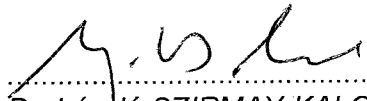
The objective of the project is to implement a control strategy to let an indoor robot follow a moving target. In a first stage the target will simply be provided as goal coordinates by the operator.

The student will adapt the existing "Explorer" application so that the robot navigates to a goal while avoiding obstacles. This application provided with MRDS implements a "wander" behaviour based on a simple obstacle avoidance strategy: it selects the largest open space. This strategy is off course not sufficient and a more advanced approach, like fuzzy logic, is required to escape from cul-de-sacs.

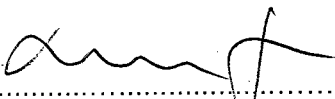
This application can be fully developed within a simulation environment with a model that replicates the capabilities of a real Pioneer 3DX used in the lab. The final product is expected to be demonstrated on real hardware.

I have accepted the project:

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Stephen Michael WHITAKER
student, B.Sc.


.....
Dr. László SZIRMAY-KALOS
professor
Head of Department

I agree with the designed project:


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Dr. János LEVENDOVSKY
professor
Vice Dean