SIMULATED MARS ROVER MODELL COMPETITION 2009-2010. SIPOS, Attila[1] VIZI, Pál Gábor[2], [1]siposattila@magyarokamarson.hu, [2]RMKI KFKI. H-1121 BUDAPEST, Konkoly Th. 29-33. vizip@rmki.kfki.hu.

Introduction: We report about organization and management Simulated Mars Rover Competition events of 2009 and 2010. www.magyarokamarson.hu [1] (Hungarians on Mars). This is a competition of applied engineering sciences as we reported in our paper 2519.pdf before the 40th Lunar and Planetary Science Conference (2009). We report also about collected experience and results at place of tournament Kiskunhalas, II. Rákóczi Ferenc High School, Hungary. Organizers of the competition are independent persons and organizations work together with High School and enthusiast sponsors. Founder of the competition is Mr. SIPOS, Attila electrical engineer.

Discussion:

Ideas: To start young people to get more experience is one of the most important things nowadays. Every year gives another challenge. The field of competition is hidden from direct visibility. Competitors must use video transmission and remote control and the navigation must be delayed by 15 seconds to simulate time of spread of the signal. The jury works mainly automatically, only results are important, but there are experienced members of jury and one of them the author of this paper.

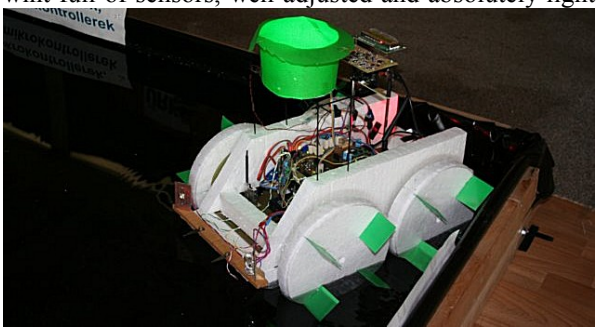
Mission 2009: The actual goal of the 2009 year competition could be achieved by building a device, an amphibian rover with sensors and advanced communication.

The track was an 8x8 square meter sized field of water and simulated swimming ice mountains from expanded polystyrene foams above level of water with iron and lead feet. Competitors have to build an amphibian vehicle (rover) which starts from either corner of the pool (simulated shallow sea) to reach the target icy island at the opposite corner. During this mission must save the crew of some disaster spaceships on small icebergs, simulated by small rubber balloons (yellow and orange).

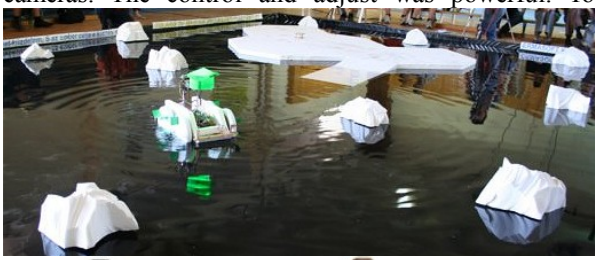
In the secondary high school category the best solution was an amphibian with a 4WD driven and air propeller aligned vehicle. They main plan was to achieve

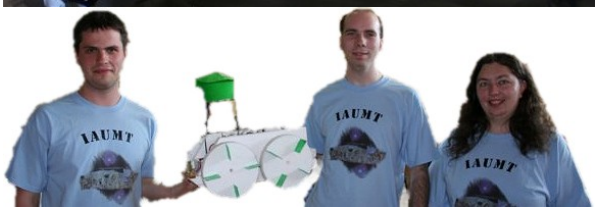
the correct position according to supported "satellite" picture which is set up above the track.

The absolute winner solution was an amphibian wiht full of sensors, well adjusted and absolutely light



weighted. It has on board local "GPS" solution, position lights, navigation cameras and illumination for cameras. The control and adjust was powerful. To

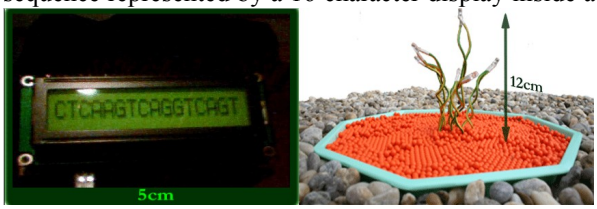




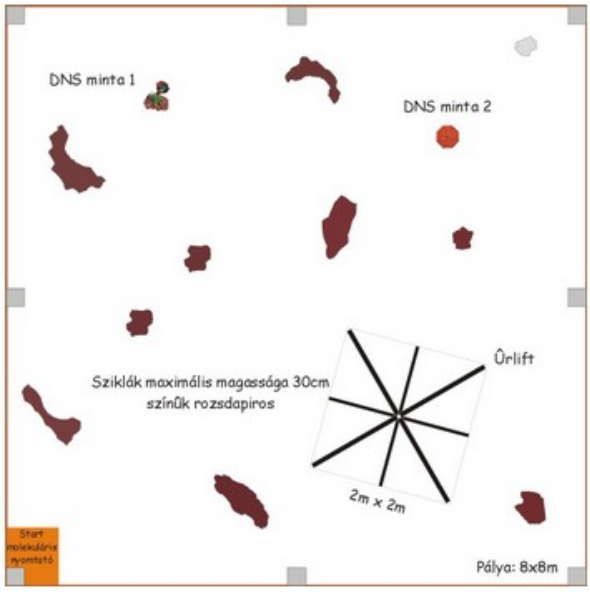
prevent form drifting it was adjusted by software according to positioning system by gently rotating paddle-wheel and normal gear combination (mainly back). Accurate management was achieved by united informa-

tion of sensors. Regulation of wheels was made by co-operation of onboard and remote computer from data of sensors with autonomous control.

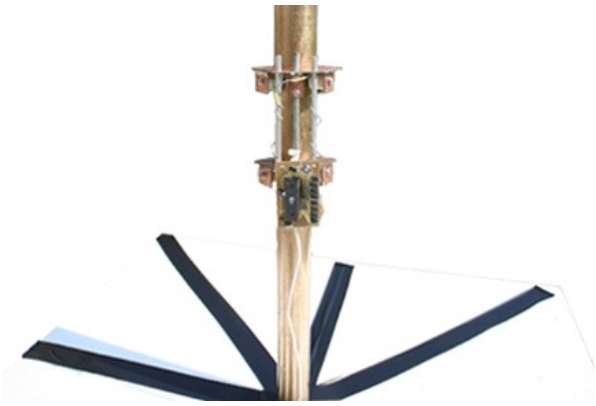
Mission 2009: The main goal to reach the target place and there to read and send back to base an DNA sequence represented by a 16 character display inside a



model of a small creature. Additional goals are to collect "soil" specimen beneath a model of plant, and to carry and put the specimen into the Mars space-harbor. At the space harbor there is a space-elevator model.



Competitors must use the elevator with their main robot or with a special elevator unit. At the top of the rod



is the space station model. The end of mission is to reach the top of the space-elevator with species of soil and send DNA sequences.

Teams: For the past four years there are several teams, high school and university departments have been trying to complete missions. Some of them were effective and students were successfully started or have finished Ph.D. study. Some of them: Budapest University of Technology and Economics (BME), Faculty of Informatics of University of Debrecen (UniDeb); Computer Science Department in Károly Eszterházy; Eötvös University (ELTE) Institute of Physics, Department of Material Physics. and other team member from Dept. Informatics; Pécs University - Dept. Informatics and G. Technology; Széchenyi István Technical High School, Székesfehérvár; Budapest Tech (BMF) Dept. Faculty of Electrical Engineering; Miklós Zrínyi National Defense University (ZMNE) Doctoral School of Military Sciences.

Prices: Prices are given by sponsors mainly cash and electronic or computer devices. The full price of the competition is about one million HUF is near 5000$.

Media: You can find a lot of documentation and media across the Internet first of all on the main website of magyarokamarson.hu and for example the webpage of Hungarian Astronomical Society [2] and of course on youtube.com by author „siposattila" [3].

Conclusion: The simulated Mars Rover Model Competition has grown up and reached the goal to train new experts. They can connect to works of Universities. We are continuously working to organize and manage next competitions with new goals. The cooperation is also growing between organizers and high schools, universities and doctoral schools.

References:

[1] SIPOS, Attila et al. (2006-) www.magyarokamarson.hu [2] VIZI, Pál Gábor (2009) *www.mcse.hu.,mediatar* http://www.mcse.hu/index.php?option=com_mediatar&task=show&archID=0473&Itemid=338 [3] SIPOS, Attila (2006-) www.youtube.com author "siposattila"