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CONTENTS

АЛЕКСАШИН О.В., ШЕВЧЕНКО К.Л., ГОРКУН В.В., НАСАДИК Х.І.....	3
SHVEC V.V.....	5
NESTERENKO S., STANOVSKA T., STANOVSKYI A., DADERKO A.	6
PROKOPOVICH I., DUKHANINA M., DOBROVOLSKAYA V., NADERI BAKHER.....	7
STANOVSKYI O., SHVETS P., BONDARENKO V., TOROPENKO O., ABU SHENA OSA- MA, WALID HUSSAIN	8
FOSHCH T.	10
KIVA I.L., ALEKSASHIN A.V.	12
SAVELYEVA O., BEREZOVSOKAYA E., MONOVA D., HEBLOV I.	14
MATICO F. D., ROMAN V. I., FEDORYSHYN R. M., PISTUN Y. P.	16
KOROTYNSKYI A., ZHUCHENKO O.	18
FEDORYSHYN R., SAVYTSKYI V., KLYOS S.	20
PALAGIN O.V., QASEM A.M., TKACHENKO O.M., KASIM M.M.....	22
BORIS V.V., ZHYGAILO O.M.	25
HEREGA A., KPYVCHENKO Y.	26
KHOBIN V.A., LEVINSKYI M.V.	27
DASCHENKO O., STANOVSKYI O., KHOMIAK Y., NAUMENKO E.	29
PELYKH S.N., ODREHOVSOKA E.A., MAKSYMOMA O.B.	31
SIUMACHENKO D. M.	32
ЧАЙКОВСЬКА Є.Є., МАТВІЧКО Н.О.....	33
SHEIKUS A.R., LEVCHUK I.L., TRISHKIN V.YA., GYRENKO A.O.	35
TITLOVA O.	37
YEHOROV V., HABUIEV K., KUCHERENKO N.	39
YEHOROV V., PUTNIKOV D.	41
YEHOROV V., IHNATIEV S., SLUTSKYI D.	42
DROBIK E., TITLOVA O.	44
БЕЛОУС Н.В., КРАСОВ А. И.	46
VOLKOV V., POPOV A.	48
LOBODA Y. G.	50
ORLOVA O.U.	52
YEHOROV V., GOLUBKOV P.S., SHIPKO A.I.	53
ДМИТРИЕНКО В.Д., ЛЕОНОВ С.Ю.	55

DEVELOPMENT OF THE PORTABLE SELF-PROPELLED ROBOTIC DEVICE

The principal idea consists in creation of a working prototype of the portable self-propelled robotic device with optimum energy efficiency. In the report are described: the reference list, compare results of control samplings of primary and operating prototypes. The type selection of the chassis and additional equipment is reasonable.

In the process of working the following tasks have been implemented.

First of all we identified construction of the chassis. Wheelbase of classical type has been chosen. It's 4x4 type. Its field of use is most of the roads and landscapes as well as certain types of cross-country.

After that we've chosen controller, motor control unit, sensors and power cell. Also we calculated electric elements for reduced voltage. They are used for sensors and other devices.



Fig. 1. The portable self-propelled robotic device on a wheelbase

In partnership cooperation Scientific Investigation Lab "Mechatronics and Robotics" and the company "LuxOfi" was a competition for the best development of the portable robot.

It was the first stage of preparations for national and worldwide competition among robotic automobile known as "Roborace". Robot must move on the surface and avoid obstacles.

To implement the company «Luxoft» competition problems presented all the necessary equipment.

There have already been drawn up the necessary electrical circuits, 3D models, and developed appropriate software.

According to the total, 3 test samples were made. Their tests and the subsequent correction of mistakes were carried out. By the end of work, the present device, on the same wheelbase, decreased in weight from 2.6 kg to 1.1 kg. As a result, range of the course increased from 83 m to 125 m and maximum speed increased from 18 km/h to 26 km/h.

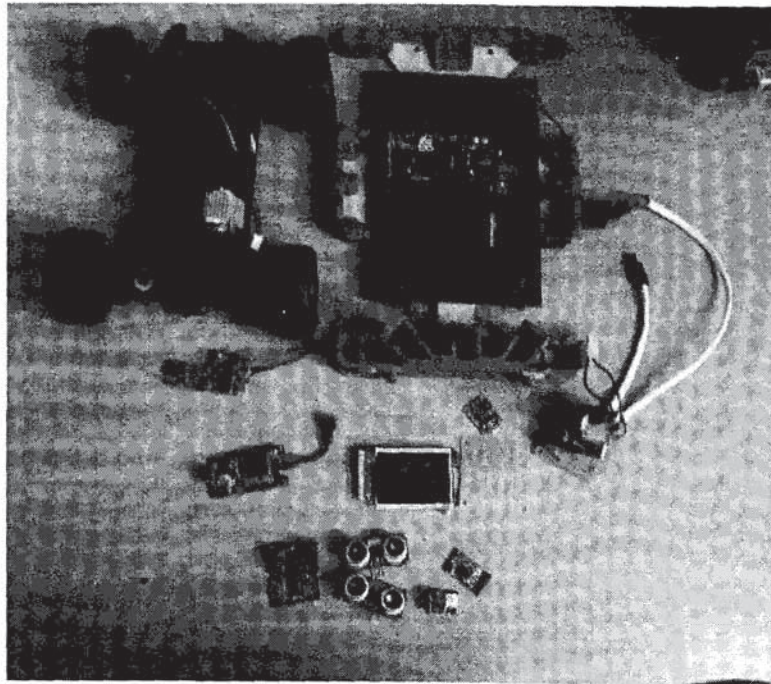


Fig. 2. Part of the Equipment provided by the Luxoft company

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