# ELE700 / ELE800: Project Design 2004/2005

# Topic:

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| *Student name:* | *E-mail:* |
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| *Faculty lab coordinator:* | | *Faculty advisor: Lev Kirischian* |
| *Estimated cost:* $400 | *Project rating: Complex* | *Date:* September 2004 |

***Title:*** **HOME SERVICE ROBOT WITH INTERNET CONTROL**

*Preamble:*
There are a lot of routine things to do at home such as: floor cleaning, monitoring temperature and humidity, security service and many other things. These routine businesses usually take a lot of time and often money from family budget. This project allows solve the problem by development of the special home service robot. Robot can be programmed via host-PC. User can program area for cleaning and monitoring, start / stop time for service functions. All functions can also be programmed / activated or deactivated via Internet. The embedded control system allows avoiding obstacles and stairs. When the battery discharges, robot interrupts its job and turns back to recharge the battery.

*Objective:*
Develop mobile autonomous home service robot with PC-programming and Internet access as well as smart behavior to avoid obstacles, stairs and discharge of battery.

*Partial specifications:*
This project consists of two parts scheduled for two students:

1. Mobile robot with embedded control system based on RISC-controller;
2. Human-Robot interface / programming system on a base of host-PC.
    - Use Microchip RISC controller PIC 16F87X for robot control system
    - Apply Visual Basic or Java for GUI and control software development
    - Use embedded RF-transceivers for PC-to-Robot communication via RS232

*Suggested approach:*

- Conduct literature survey on robotic systems for vacuum cleaning and appliances control,
- Built a prototype of mobile platform with control system on a base of RISC controller,
- Develop GUI and path-programming software including Internet access,
- Design RF-communication line and interface PC via RS232 with mobile platform,
- Design charger with IR-transmitter and IR-navigation subsystem for the robot.