



Robot for painting easter eggs

Countries:	Poland 	Slovakia 
Suitable for grade:	2 - 3	3 - 4
Specialization:	Mechatronics or IT	Technical lyceum Electrotechnics
Responsible teacher:	Opoka Artur	Jozef Gmiter

Project description:

Goal of the project is to build robot for painting easter eggs based on microcontroller (can be found on internet as EggBot). Whole robot should be similar to CNC turning machine. Robot should have rotation part to which egg will be stuck by its longer axis. Rotation part will rotate the egg in 360°. Other part of robot will hold the marker and can move in horizontal axis (circular motion) with pressing or releasing pen to egg. Robot will be made of two modules - controlling software and mechanical.

Project tasks:

Student #1 (PL):

- Design mechanical part of robot
- Design propulsion system for:
 - o Rotate egg around its longer axis of 360°
 - o Move pen in semicircle horizontal movement with pressing and releasing
- Test fixing the egg in to rotational part and function of all motors

Student #2 (SK):

- Prepare application for processing graphical file (e.g. SVG) into commands file for robot
- Prepare application for microcontroller for sending signal based on graphical commands to motor drivers
- Prepare testing patterns for painting easter eggs
- Test painting algorithm on robot

Success criteria:

Project will be successful after construction of working robot that will paint custom patterns on egg without damaging it. All project parts should be cost efficient and computer code should be well designed (time and memory efficient, without bugs). Project documentation has to be prepared based on given template in the range of 15-25 in English and native language.

Developed hard skills:

Programming, debugging, soldering, drilling, designing and making PCB, electronics, mechanical treatment of materials, choosing materials, computer graphics, CAD systems.

Developed soft skills:

Cooperation, working with computer, planning, teamwork, tracking progress, communication in foreign language, responsibility, compliance with agreements, respect deadlines, problem solving, finding and processing information, design thinking, following safety and ergonomic rules.