Educational Robotics Courses: Creative Design of Locomotive Robots with Plastic Bottles

(Asso. Prof. H. Yokoi and Prof. T. Arai)

The decrease in the number of engineering students has focused on educational robotics courses, which concretely encourages student interest in and curiosity about science and technology. In this research, we also provide an attractive solution to this vexing problem by proposing an educational robotics approach featuring a unique robotic development kit - hardware, software, and instructions. The kit was developed based on practical policies: easy construction, low cost, creative activity, and enjoyable education. It uses common materials such as plastic bottles, RC servomotors, and hot glue, and provides two different controllers with instructions - a sensor-motor controller and an electromyography (EMG) interface controller. The kit thus offers more custom access to both robot structure and control architecture than similar kits and encourages students to become engaged creatively.

Keywords: Edutainment, Creative Activity, EMG, Legged Locomotion.

References

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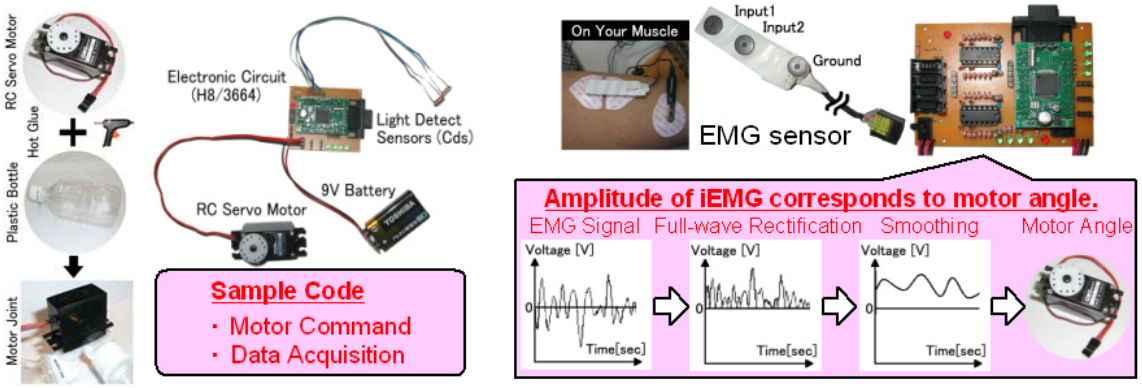
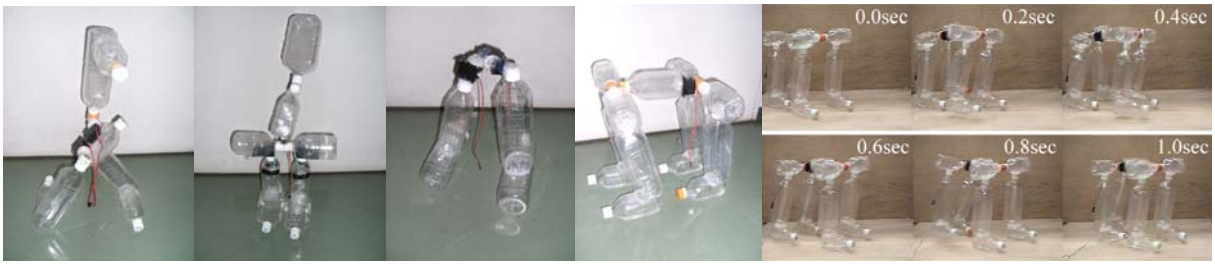


(a) Rapid prototyping method (b) A sensor-motor controller (c) An iEMG controller

Fig.1 Proposed robotic developmental kits



(a) plastic-bottle-based robots designed by students (b) Walking scene of a quadruped robot

Fig. 2 Plastic-bottle-based robots