ESOP

Brief Introduction
ESOP is a micro robot with a new user interface. A user can operate the robot by placing the instruction blocks on the robot. ESOP means easy operation.

Keywords: Human Robot Interaction, Interface Design

Objectives

- Focused on Robot Interface
- Intuitive interface using small wood blocks
- New way of directing/programming robot

System Design

CPU	**Motorola HCS12(MC9S12DT256B)**
Hardware	**Stepping Motors, LEDs, Fan, Thermometer, etc**
Software	**C (using Freescale CodeWarrior)**

▪ User Interface

▪ **Instruction Board**
- Instruction Blocks are placed here.
- Connected to the main board(ADC pins).

▪ **Instruction Blocks**
- Different types of instructions
- Each types of resistor contains different resistors
- Different Resistors, Different ADC values

▪ **Categories of Instruction**

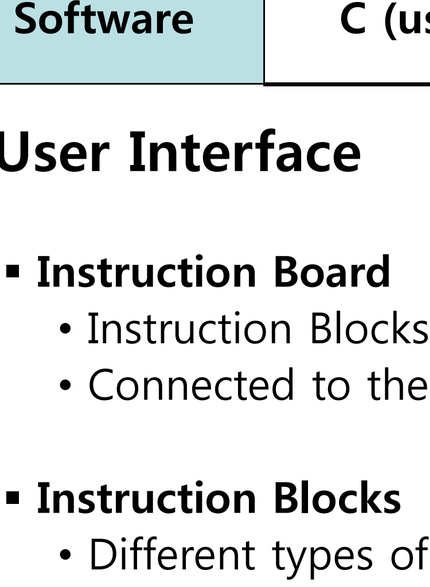

Figure 1.
The instruction blocks

- Movement
  - Go straight/ Turn left, right, 180degree
  - For 30/50/100cm
- Loop
  - Beginning of Loop
  - Number of loop: twice/three times
  - End of Loop
- Conditional
  - If dark, If Cold
  - Turn On LED, FAN
- End of Instruction

How It Works

1. Place the instruction blocks on the instruction board.
2. After placing the instructions, place "End of Instruction" block
3. ESOP executes the instruction in the order of placement.

Results

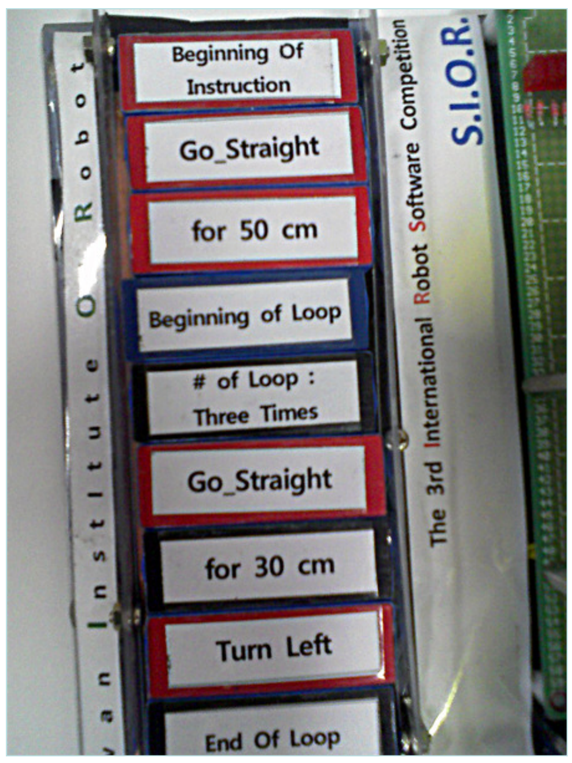

Figure 2. The example of instructions

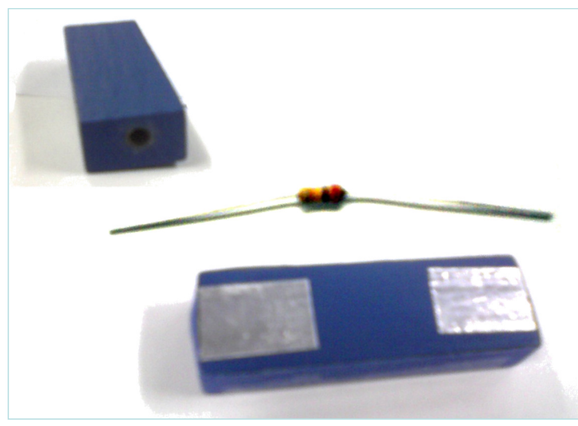

Figure 3. Making of the instruction blocks

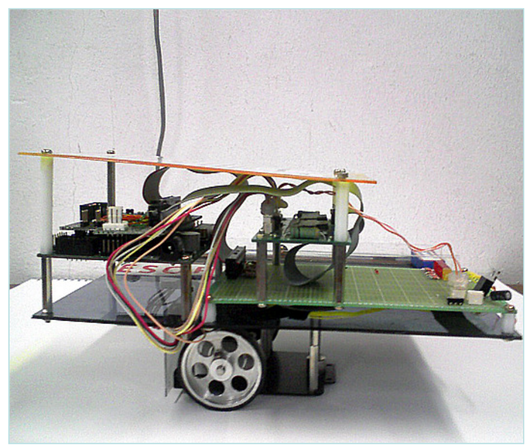

Figure 4. Side view

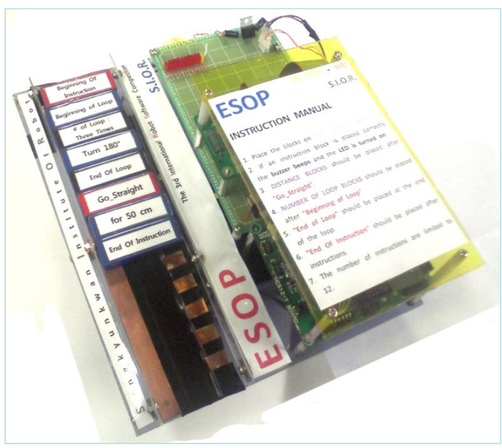

Figure 5. Top view

Outcomes

- Easy & Intuitive robot interface
  - Placing blocks to operate the robot
  - People found it fun

- 3rd place, International Robot Software Competition 2009