

Vector State Machine (VSM) Robot Arm Implementation (Feb 2013)

Specifications:

Manual and automatic control of simulated robot arm in 3-D space.

Manual control:

- Up and Down Arm
- Up and Down Forearm
- Up and Down Hand
- Open and Close Hand
- Move CW or CCW
- Ping returns distance and angle to target
- Ping indicates when target is out of range

Automatic control:

- Find and retrieve target
 - Returns ping information
- Commands
 - "Draw circle radius=3;"
 - "Find red ball;"
 - "Retrieve black box;"

Program Details:

Four Delphi XE units plus main

- Robot Unit
 - 1806 LOC
 - TCOSARobot class
 - TRobotArm class
 - 0 "if" statements
- Environment Unit
 - 645 LOC
 - TCOSAEnvironment class
 - TCOSATarget class
 - 0 "if" statements
- Heuristics Unit
 - 1375 LOC
 - TCOSAbehavior class
 - 3 "if" statements
- Behavior Unit
 - 1183 LOC
 - TCOSAbehavior
 - 1 "if" statement

25 lines of logic used to find the target in 3-D space.

5009 lines of code with 4 "if" statements in the complete application.