

Movement Optimization of Robotic Arm Movement Using Soft Computing

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Abstract : Robots are now playing a very promising role in industries. Robots are commonly used in applications in repeated operations or where operation by human is either risky or not feasible. In most of the industrial applications, robotic arm manipulators are widely used. Robotic arm manipulator with two link or three link structures is commonly used due to their low degrees-of-freedom (DOF) movement. As the DOF of robotic arm increased, complexity increases. Instrumentation involved with robotics plays very important role in order to interact with outer environment. In this work, optimal control for movement of various DOFs of robotic arm using various soft computing techniques has been presented. We have discussed about different robotic structures having various DOF robotics arm movement. Further stress is on kinematics of the arm structures i.e. forward kinematics and inverse kinematics. Trajectory planning of robotic arms using soft computing techniques is demonstrating the flexibility of this technique. The performance is optimized for all possible input values and results in optimized movement as resultant output. In conclusion, soft computing has been playing very important role for achieving optimized movement of robotic arm. It also requires very limited knowledge of the system to implement soft computing techniques.

Keywords : artificial intelligence, kinematics, robotic arm, neural networks, fuzzy logic

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