



genetic algorithm is applied in order to find out an optimal combination of internal parameters of the CPG given a desired walking speed in straight line. Feedback signals generated by the robots inertial and force sensors are directly fed into the CPG in order to automatically adjust the locomotion pattern over uneven terrain and to deal with external perturbations in real time. Omnidirectional motion is achieved by controlling the pelvis motion. The performance of the proposed control system has been assessed through simulation experiments on a NAO humanoid robot.