

Obstacle avoidance mechanism

Inspired by whiskers, the sensors enable the robot to perceive its environment. The sensor outputs are coupled with mechanosensory oscillators, which drive the RTS control mechanism and the propulsion system. A single robot has four secondary oscillators which take feedback from different groups of whiskers (left, right, front and back). The output of these oscillators is then combined to interact with neighbors and the environment.

Propulsion system

Consists of a thin membrane which triggers pumping action. The frequency of pumping is also controlled by the same group of oscillators.

Real-time tunable spring

It is consists of a DC-motor, winding mechanism and a spring. The resting length of spring is controlled by the combined output of the four oscillators.