FESA: Fuzzy-Controlled Energy-Efficient Selective Allocation and Reallocation of Tasks Among Mobile Robots

Authors : Anuradha Banerjee

Abstract : Energy aware operation is one of the visionary goals in the area of robotics because operability of robots is greatly dependent upon their residual energy. Practically, the tasks allocated to robots carry different priority and often an upper limit of time stamp is imposed within which the task needs to be completed. If a robot is unable to complete one particular task given to it the task is reallocated to some other robot. The collection of robots is controlled by a Central Monitoring Unit (CMU). Selection of the new robot is performed by a fuzzy controller called Task Reallocator (TRAC). It accepts the parameters like residual energy of robots, possibility that the task will be successfully completed by the new robot within stipulated time, distance of the new robot (where the task is reallocated) from distance of the old one (where the task was going on) etc. The proposed methodology increases the probability of completing globally assigned tasks and saves huge amount of energy as far as the collection of robots is concerned.

Keywords : energy-efficiency, fuzzy-controller, priority, reallocation, task
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020