

This paper presents a multi-agent based wireless pyroelectric infrared sensor network for human tracking and self-calibration. The goal of this research is to achieve a scalable, reconfigurable multi-agent system (MAS), which consists of sensing, action, decision, and database agents, for human tracking and self-calibration. Sensing, action and decision agents can be developed from one uniform reconfigurable node. Sensing agents contain PIR sensors, a signal conditioning circuit, and programmable system on a chip (PSoC). Action agents contain a servo motor, a servo control circuit, and PSoC. Decision agents contain a field programmable gate array (FPGA) board, which can implement self-calibration algorithm. Database agents are developed using SUN MySQL platform, which contains situation and group information (e.g., number of targets, system geometric parameters, nodes positions and orientations). Initial experimental results illustrate the advantages of the proposed MAS based PIR sensor networks