Swarm Based Intelligent Transition of Control from Manned to Unmanned Vehicular System Using Sun SPOT

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ABSTRACT:

In this Modern era it has become mandatory that a better automated transportation service has to be provided with effective management of fuel, better traffic route planning compared with traditional transportation system. A new system with the view of preventing traffic congestion with the capability of effectively sensing and monitoring environmental factors such as temperature, illumination of the surrounding, acceleration and position of the vehicle in three dimensional spaces has to be devised. Further the system must be capable of learning and adapting itself to the external environment with the ultimate goal of predicting the current position of the vehicle at a given instant of time with greater accuracy. The transition of control from the Manned to the unmanned system is possible only if the artificially conscious systems evolve to suite cognitive human processes. A simulated real time ambient intelligent system called SUVs (Sun SPOT based Unmanned Vehicular System) which will have situational awareness and will be capable of taking complete control over the external environment by sensing with the help of ubiquitous devices such as Sun SPOT (Small Programmable Object Technology) is modeled. Ubiquitous Collaboration Services is provided for SUVs in order to share its gained knowledge which provides effective adaptation to real time environment. Swarm intelligent techniques are adopted for effective traffic control and to mimic human behavior with the vision of providing infrastructure for Service oriented architecture along with a vision of building unmanned vehicular systems. A transition model is simulated utilizing various inputs to the ubiquitous devices providing real-time services for mobile vehicular agents.