

ABSTRACT

The recent applications of Wireless Body Sensor Network (WBSN) demand a fail safe and fault tolerant communication. The availability and continuous monitoring in WBSN is mandatory as it serves the purpose of life saving during critical conditions. The present state of art in WBSN involves monitoring patient in out of hospital environment. It also monitors astronaut's and pilot's physiological signals during their flight time. This also provides knowledge on the exact location of subject to sophisticate their needs. The investigation of this research addresses issues in continuous monitoring and problems associated with implanted node in WBSN. This research considers the issues affecting the availability in Wearable WBSN, implanted WBSN and Wireless Nano Body Sensor Network (WNBSN). Increasing the availability of nodes creates a fail safe environment for being monitored. The energy hole problem, HOT SPOT issue and transient disturbance affects the availability of the sensor nodes from being monitored. The status of the subject being monitored is modeled as Finite State Machine. The sensor nodes are made available based on the status of the subject. The energy unit of sensor node is considered while scheduling the nodes in the WBSN. The tissue damage and trust is considered in case of nodes that are implanted inside the human body. The fault in an implanted node could cause interrupted monitoring and tissue damage. Hence the scheduling and loading of nodes is done based on the nature of monitoring the physiological signal. The fault due to sensing system in the WNBSN is addressed. The time to recover from sensing state to recovery state in WNSBN disables its continuous monitoring. This problem is addressed by scheduling the nodes based on the sensing subsystem. The status of subject together with state of energy and sensing system is considered for effective increase in availability of nodes and

increase the data throughput of the network. The proposed Fail Safe Fault Tolerant (FSFT) routing, Thermal Aware Fail Safe Fault Tolerant (TA-FSFT) and Fail Safe Path Selection (FSPS) routing serves to solve the problem of communication failure due to lack of power and problem of tissue damage. The Fault Tolerant Trust worthy (FTTW) routing proposed solves the problem of trust to the implanted nodes in the WBSN. The Fail Safe Energy Efficient (FSEE) routing and Fail Safe Reliable Routing (FSRR) routing solves the problem of availability in WNBSN. The result shows improve in lifetime of the network with increased data throughput, the proposed algorithms solves the energy hole problem and HOT SPOT issues in the network.