

BRAIN INSPIRED COMPUTING NETWORKS FOR SMART BUILDING MONITORING

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Introduction. The intelligent sensor systems capable of measuring a wide range of building conditions remotely, and in a real-time manner can reveal useful information on the overall quality of services offered in the maintenance and reliability of building space.

Methodology. In this research project, we make use of brain inspired computing techniques to develop intelligent monitoring system capable to identify conditions and status of building space usage and functioning. These neuron inspired algorithms are planned to be realized in collaborative set of the microcontroller networks each reading a different set of parameters in a mutually co-existing manner, having the ability to process sparse signals in a hierarchical and temporal manner in real-time conditions.

Results and discussion. So far we were able to simulate a single node in the network to measure some basic sensory processing of temperature and motion data to identify the usage statistics in a lab environment. We plan to change the sensor nodes to work across internet-sensor of things to measure spatially and functionally distinct components within the lab-room conditions. In addition, the collaborative functioning of the sensor nodes to talk with each other to make sensor level and decision level fusion is also looked into. The test system is currently implemented with Aurdino UNO boards and 8051 microcontrollers. It is planned to develop a network of sensors and a system of networks for collaboratively make intelligent decisions for real-time large-data monitoring purposes.