The continues technology evaluation is benefiting our lives to a great extent. The evolution of Internet of things and deployment of wireless sensor networks is making it possible to have more connectivity between people and devices used extensively in our daily lives. Almost every discipline of daily life including health sector, transportation, agriculture etc. is benefiting from these technologies. There is a great potential of research and refinement of health sector as the current system is very often dependent on manual evaluations conducted by the clinicians. There is no automatic system for patient health monitoring and assessment which results to incomplete and less reliable heath information. Internet of things has a great potential to benefit health care applications by automated and remote assessment, monitoring and identification of diseases. Acute pain is the main cause of people visiting to hospitals. An automatic pain detection system based on internet of things with wireless devices can make the assessment and redemption significantly more efficient.

The contribution of this research work is proposing pain assessment method based on physiological parameters. The physiological parameters chosen for this study are heart rate, electrocardiography, breathing rate and galvanic skin response. As a first step, the relation between these physiological parameters and acute pain experienced by the test persons is evaluated. The electrocardiography data collected from the test persons is analyzed to extract interbeat intervals. This evaluation clearly demonstrates specific patterns and trends in these parameters as a consequence of pain. This parametric behavior is then used to assess and identify the pain intensity by implementing machine learning algorithms. Support vector machines are used for classifying these parameters influenced by different pain intensities and classification results are achieved. The classification results with good accuracy rates between two and three levels of pain intensities shows clear indication of pain and the feasibility of this pain assessment method. An improved approach on the basis of this research work can be implemented by using both physiological parameters and electromyography data of facial muscles for classification.

Keywords: Pain assessment, Physiological parameters, Machine Learning, Support vector machine