

The Role of Optical Fiber Sensor in Internet of Things: Applications and Challenges: Review

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The use of fiber Bragg grating (FBG) Optical sensors in the Internet of Things (IoT) has made a lot of research interest because of the potential applications, such as remote monitoring of transformer substation subsidence, intelligent power grid sensing, and mine safety monitoring [1]. Disaster prediction and forecasting in infrastructure building, on the other hand, necessitate the use of remote sensing and monitoring disruptive technology of IoT [1,2]. There is need to develop optical sensors based on FBG sensor technology to overcome the present challenges with monitoring using the conventional sensors which are not immune to Electromagnetic Interference and, are prone to corrosion and have no capacity to perform distributed sensing [3]. In Optical fiber a sensing device is used in made of grating structures. These sensors detect various physical parameters like temperature, pressure, vibrations, displacements, rotations, and chemical species concentration. Optical fiber Sensors have a wide range of applications in the field of remote sensing because they do not require electrical power at the remote location and are tiny [3] which makes them easier to proliferate even in buildings. Some other applications of Optical Fiber Sensors include monitoring the health of composite materials, determining different chemical characteristics, biological and biometric applications, such as blood flow measurement and also industrial applications such as product characterization, real-time thermal imaging, composition analysis, delamination and defect detection, surface inspection, and many others [2,3]. The downside of optical fiber sensors requires much expertise in the fabrication and deployment of the sensors. This paper will review more of the adoption of optical fiber sensors in IoT with corresponding opportunities and challenges.

References

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