Abstract

The production of electricity from photovoltaic (PV) energy is a fast-growing area of research in academia and industry. This trend has been boosted by the massive deployment of large-scale grid-connected photovoltaic power plants, which has stimulated research efforts regarding reliability and cost-effectiveness. However, photovoltaic systems are subject to various types of malfunction, whether temporary or permanent, and these malfunctions can have a significant impact on system performance and availability. In this context, meticulous monitoring and fault diagnosis of photovoltaic (PV) systems is essential to ensure the long-term reliability and sustainable operation of the entire PV system. Up to now, PV system fault detection and diagnosis can be classified into three main groups: process history based methods, quantitative model based methods and signal and image processing based methods. This talk will cover current practices and new trends in fault detection and diagnosis in grid connected PV systems, including the emergence of deep and machine learning approaches.