Abstract

By 2040, world's total energy requirement will increase by 56 % [1]. Currently, all primary energy resources are non-renewable. Solar energy is one of the largest renewable energy sources. By 2050, solar photo-voltaic energy will contribute approximately 16% of the total energy requirement in the world [2]. But, solar energy depends on meteorological conditions such as temperature, humidity, the height of the panel from the ground, elevation angle, azimuth angle, time of the day, the month of the year, dust on the surface of the panel, apparent temperature, cloud cover, and other unknown parameters. Thus, the production of solar energy is volatile, and maintaining supply-demand trade-off is difficult. Accurate solar energy forecasting can help maintain the grid in an equilibrium state. Most of the current methods of solar energy forecasting require information about the solar site. In this thesis, we propose a method to forecast energy production without using solar site information. In our approach, we train a machine learning model using solar energy and weather data of 1.5 years, collected from the IIT Gandhinagar campus. Our approach compares favorably to several baselines methods.