## NEURAL NETWORK APPLICATIONS IN SOLAR IRRADIANCE PREDICTION

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## ABSTRACT

In recent years, introduction of a renewable energy source such as solar energy is expected due to the expected depletion of other conventional energy sources. Solar energy is one of the most promising renewable energy sources. In order to integrate this type of source into an existing power distribution system, system planners need an accurate model that predicts the availability of the generating capacity. However, solar radiation is not constant and power output of photovoltaic (PV) system is influenced by many factors including weather conditions, location of the power plant and irradiation intensity, angle of incidence of the rays, sunshine duration, etc. This work focuses on prediction of solar irradiation, and thus the current/power generated during the day. In order to predict this to a successful extent, an artificial neural network is applied. The irradiation and other training data of one year (December 2012 to November 2013) have been derived from Tata Power Company's Mulshi Solar Power Plant. This paper compares outputs from various neural network models based on supervised learning rules.

KEYWORDS: Artificial Intelligence, Solar Energy, Solar Irradiance, Neural Network, Prediction