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SenSIP Student Seminar Series

Cloud Category Based Solar Irradiance Prediction

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Abstract

Irradiance prediction and forecasting has been one of the key aspects in efficiently designing the photovoltaic systems. Since clouds are one of the major causes of intermittency and uncertainty in PV power generation, in this work we utilize cloud type information itself to solve the problem of classifying coarse irradiance variability which directly affects the power output for smart grids. Cloud identification is the first step in several photovoltaic power generation forecasts and hence, we aim to utilize the knowledge to provide a range of Global horizontal irradiance (GHI) depending on cloud category. To this end, we develop a deep learning based method for GHI prediction and validate its effectiveness using a challenging dataset from National Solar Radiation Database (NSRDB). The empirical analysis shows a strong correlation between cloud types and the irradiance values which aids in improving the power output efficiency of PV array.

Biography:

Sameeksha Katoch is a Ph.D. student in electrical engineering at Arizona State University (ASU). She received her Masters in electrical engineering from ASU in 2018 and a Bachelors in electronics and communication engineering from the National Institute of Technology, Srinagar, India, in 2015. She has interned with Lawrence Livermore National Laboratory and Prime Solutions Group, Inc. over the past summers. Her research interests include developing privacy conscious deep learning models for applications in healthcare and utilizing task/domain semantics for understanding and improving deep learning model performance on a wide variety of tasks.

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