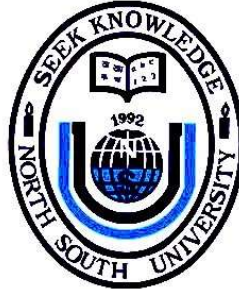


Department of Electrical and Computer Engineering

North South University



Senior Design Project
Short-term Solar Power
Forecasting

Md. Saifullah Mehedi ID# 1512075043
Sharif Sefatul Muntasir ID# 1511087043
Md. Imtiaj Hossain ID# 1511485643
Md. Al Amin ID# 1610651043

Faculty Advisor:

Dr. Mahdy Rahman Chowdhury

Associate Professor

ECE Department

Summer – 2019

LETTER OF TRANSMISSION

September 2019

To

Dr. K. M. A. Salam

Chairman and professor

Department of Electrical and Computer Engineering

North South University, Dhaka

Subject: **Submission of Capstone Project Report on “Short-term Solar Power Forecasting.”**

Dear Sir,

With due respect, we would like to submit our Capstone Project Report on “Short-term Solar Power Forecasting” as a part of our BSc program. The report deals with load forecasting of the future based on past and present data. This project was very much valuable as it helped us to gain experience from the practical field and apply it in real life. We tried the maximum competence to meet all the dimensions required from this report.

We will be highly obliged if you kindly receive this report and provide your valuable judgment. It would be our immense pleasure if you find this report useful and informative to have an apparent perspective on the issue.

Sincerely Yours,

.....

Md. Saifullah Mehedi

ECE Department

North South University, Bangladesh

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Sharif Sefatul Muntasir

ECE Department

North South University, Bangladesh

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Md. Intiaj Hossain

ECE Department

North South University, Bangladesh

.....

Md Al Amin

ECE Department

North South University, Bangladesh

APPROVAL

The capstone project entitled “**Short-term Solar Power Forecasting**” by Md. Saifullah Mehedi (ID# 1512075043), Sharif Sefatul Muntasir (ID# 1511087043), Md. Imtiaj Hossain (ID # 1511485643), and Md. Al Amin (ID# 1610651043) is approved in partial fulfillment of the requirement of the Degree of Bachelor of Science in Computer Science and Engineering and has been accepted as satisfactory.

Supervisor’s Signature

Dr. Mahdy Rahman Chowdhury

Associate Professor

Department of Electrical and Computer
Engineering North South University
Dhaka, Bangladesh.

Department Chair’s Signature

Dr. K. M. A. Salam

Professor

Department of Electrical and Computer
Engineering North South University
Dhaka, Bangladesh.

DECLARATION

This is to certify that this Project is our original work. No part of this work has been submitted elsewhere partially or fully for the award of any other degree or diploma. Any material reproduced in this project has been properly acknowledged.

Students' name & Signature

1. **Md. Saifullah Mehedi**

2. **Sharif Sefatul Muntasir**

3. **Md. Imtiaj Hossain**

4. **Md. Al Amin**

ACKNOWLEDGMENT

First of all, we wish to express our gratitude to the Almighty for giving us the strength to perform our responsibilities and complete the report.

The capstone project program is very helpful to bridge the gap between theoretical knowledge and real-life experience as part of the Bachelor of Science (BSc) program. This report has been designed to have practical experience through theoretical understanding.

We also acknowledge our profound sense of gratitude to all the teachers who have been instrumental in providing us the technical knowledge and moral support to complete the project with full understanding.

It is imperative to show our appreciation for our honorable faculty member ***Dr. Mahdy Rahman Chowdhury*** for his undivided attention and help to achieve this milestone. Also, our gratefulness is divine to the North South University, ECE department for providing us a course such as EEE 499 in which we could really work on this project and materialize it the way we have dreamt of.

We thank our friends and family for their moral support to carve out this project and always offer their support.

We would also thank our other respective faculty member ***Dr. Shohana Rahman Deeba*** madam for his undivided attention and providing us the necessary support and advising us during the development of this project.

ABSTRACT

The main aim of our project is to forecast solar (PV) Photovoltaic output power for the short term depending on a few parameters that are related to solar power generation. In our project, we have investigated and implemented a short term forecasting approach to predict solar PV power for 5, 10 and 15 minutes horizon and at every sampling step. Forecasting is the process of making predictions of the future based on past and present data and most commonly by analysis of trends. Solar PV is a device that converts the energy of sunlight into electricity based on radiation. In power systems, PV power forecasting is crucial as this helps to predict load and generation. Therefore, the accuracy of forecasting is of great significance for the operational and managerial loading of a utility company.