**Department of Electrical and Computer Engineering**
**North South University**

## Senior Design Project

# Effectiveness of Online Classes DuringCovid-19 Pandemic Using Machine Learning

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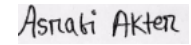
Spring, 2021

# DECLARATION

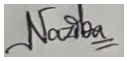
This is to certify that this Project is our original work. No part of this work has been submitted elsewhere partially or fully for the award of any other degree or diploma. Any material reproduced in this project has been properly acknowledged.

**Students' name & Signature**

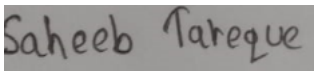
1. **AsrafiAkter**



2. **Naziba Nasir**



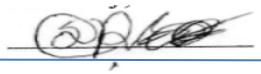
3. **SaheebTareque**



# APPROVAL

The capstone project entitled "**Effectiveness of Online Classes DuringCovid-19 Pandemic Using Machine**" by **Asrafi Akter (ID#1711502042), Naziba Nasir (ID#1612618042),** and **Saheeb Tareque (ID#1721809042)** is approved in partial fulfillment of the requirement of the Degree of Bachelor of Science in Computer Science and Engineering on May and has been accepted as satisfactory.

**Supervisor's Signature**



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# 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 the theoretical knowledge and real-life experience as part of Bachelor of Science (BSc) program. This report has been designed to have a practical experience through the theoretical understanding.

We also acknowledge our profound sense of gratitude to all the teachers who have been instrumental for 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. Dr. Mohammad Monirujjaman Khan 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 CSE 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.

# ABSTRACT

The deadly COVID-19 started its journey from the December 2019 from the country china. For most of the patients it's like a mild fever and non-specific gastrointestinal symptoms to a lesser extent. Aged people with previous illness like diabetics, heart problem, and blood pressure etcetera suffer the most. Until 26th May 2021, there have been Corona virus 169,094,726 confirmed cases of COVID-19, including 3,512,510 deaths, reported to World Health Organization. Since the covid-19 lifestyle has changed for almost everyone. That's when E-learning had a bigger impact for all the students around the world. It is no different for the students of Bangladesh too. In order to keep the study of the students, the government of Bangladesh took a decision and advised the educational institutions to take classes through online.While attending online classes students are facing many opportunities and obstacles like: disruption in class, health issues, financial issues, save time from traffic. However, being captive, they have utilized their time a lot better and this has reflected on their performances too. Machine Learning is a sub-region of man-made reasoning, which predicts outcomes depending on the features on a given dataset. In this paper with the help of machine learning approach

university student's performance during pandemic was found. By creating our own dataset, model was trained and then prediction was done depending on the different features of the dataset. The collecting data that helped to create a model and which gave the highest accuracy over student's performance. Exploration was done using different algorithms i.e., Linear Discriminant Analysis (LDA), Logistic Regression and K-Nearest Neighbor (KNN) for classification. Prediction score Accuracy of 81.05 % by LDA, 86.3% by Logistic Regression and 84.2% by KNN was achieved. The highest prediction score was achieved by Logistic Regression (86.3%). The accuracy shows the effectiveness of online classes during pandemic through Machine Learning approach. It shows how the online classes is effective for a particular student when the input fields are filled. Overall, after performing the three algorithms (K-Nearest Neighbor, Logistic Regression, Linear Discriminant Analysis)with satisfactory results and successfully predicting with high level of accuracy while maintaining keeping up with its objective of being ease and easy to apprehend.