COVID-19 Patient Detection with Chest X-Ray

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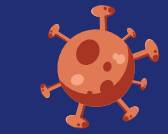
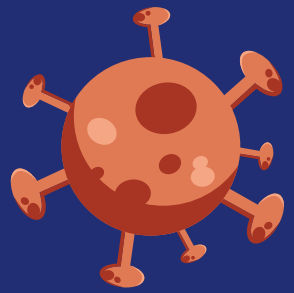


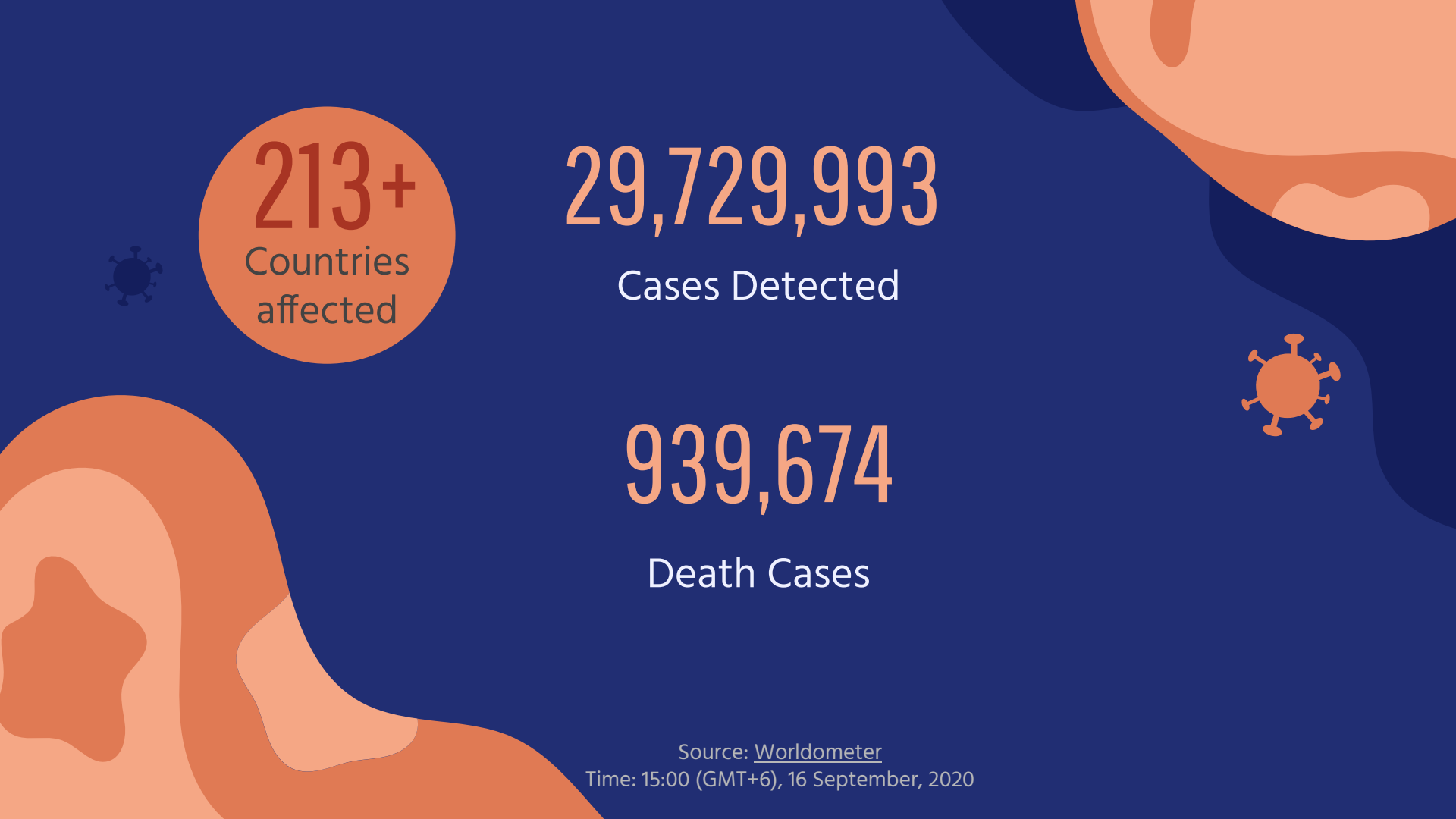
Warning!

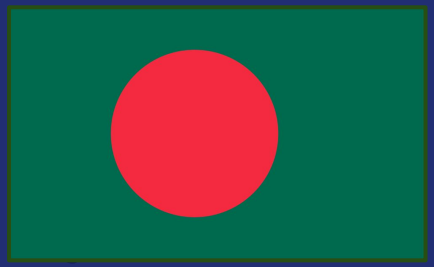
This Project is for Educational Purpose.
Diagnosing COVID-19 Patient is
NOT Advised.



01

Motivation


213+
Countries affected
29,729,993
Cases Detected
939,674
Death Cases
Source: Worldometer
Time: 15:00 (GMT+6), 16 September, 2020



341,056

Cases detected

4,802

Death Cases

10,645

Tests/ 1M people

(158th among 194 countries)

Source: Worldometer

Time: 15:00 (GMT+6), 16 September, 2020

What Motivates Us?

01 Insufficient Medical Resources of Bangladesh

02 Easier, Cheap and Fast Detection System

03 Aim to Avoid False Positive & False Negative Result

02

Existing Solutions

Present Detection Processes for COVID-19

RDT based on Antigen Detection

RDT based on Antibody Detection

Swab Test

Nasal Aspirate

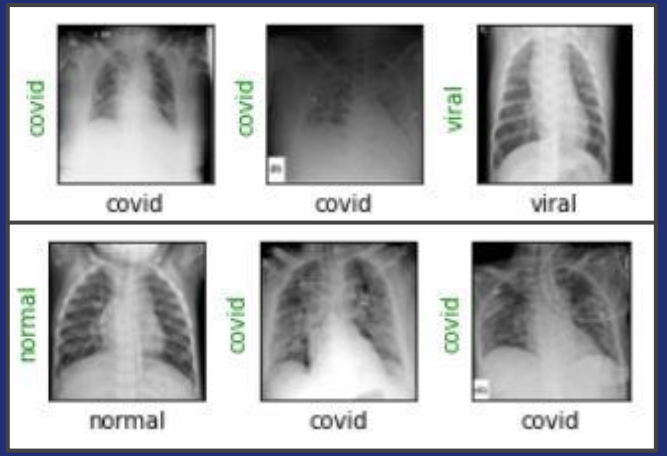
RT - PCR

Sputum Test

03

Proposed Solution

COVID - 19 Patient Detection Using Chest X-Ray



04

Dataset & Experimental Setup

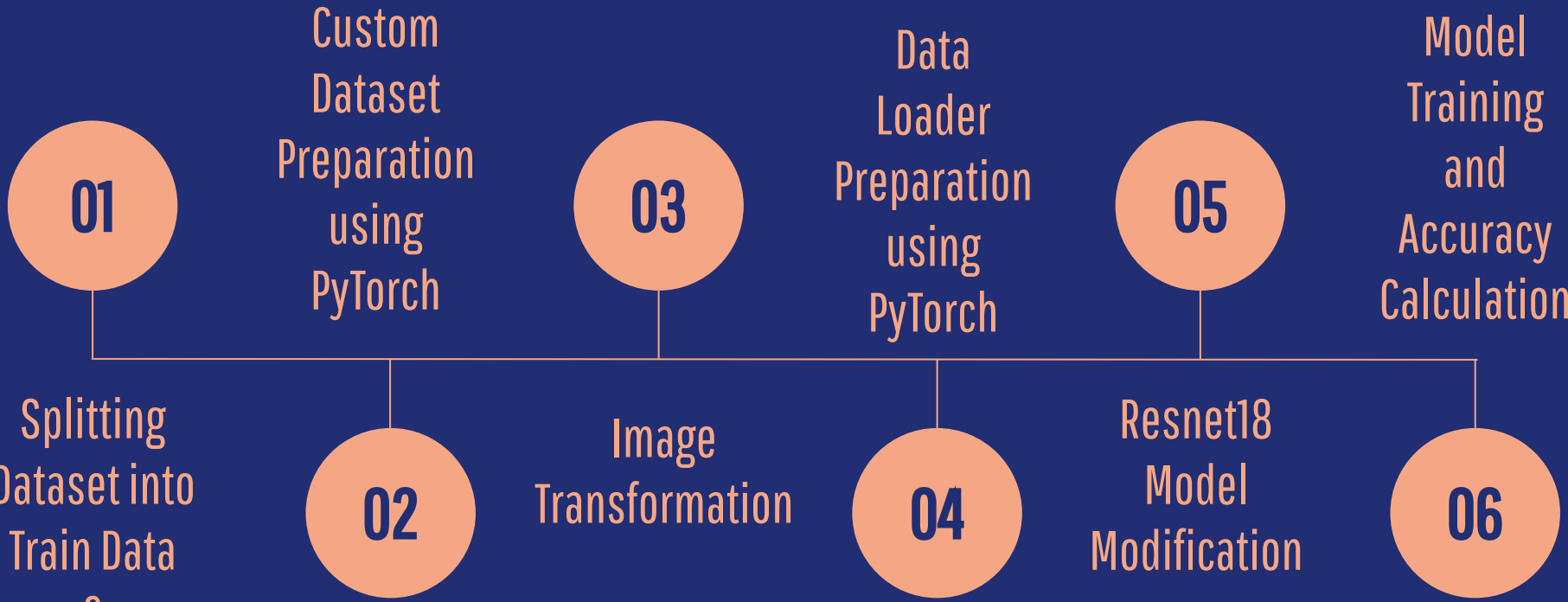
Dataset

COVID-19 Radiography Database

Source: Kaggle

- **Normal Patients' X-Ray** — 1341 images
- **Viral Pneumonia Patients' X-Ray** — 1345 images
- **COVID-19 Patients' X-Ray** — 219 images

Workflow


01
Splitting Dataset into Train Data & Test Data
02
Custom Dataset Preparation using PyTorch
03
Image Transformation
04
Data Loader Preparation using PyTorch
05
Resnet18 Model Modification
06
Model Training and Accuracy Calculation

05

Performance

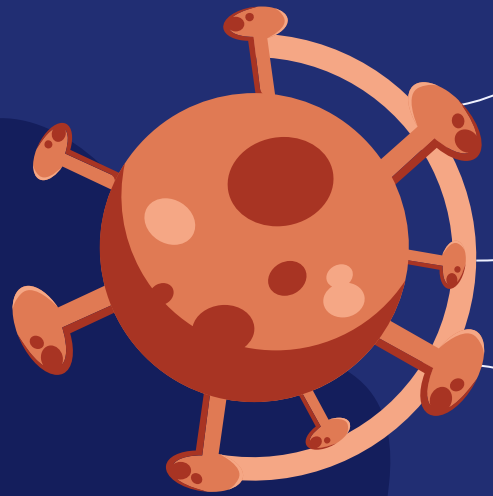
95% +

Accuracy

06

Challenges

Challenges We are Facing



01 Imbalanced Dataset

02 Quick Mutation of Coronavirus

03 Probability of Overfitting

07

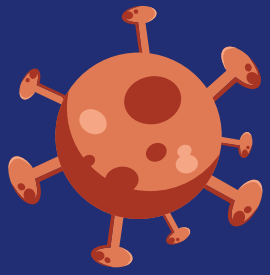
Future Improvements

Dataset incrementation

02 UI based App

Feature incrementation

Contact Tracing



Demonstration

Resources

Research Paper: Can AI Help in Screening Viral and COVID-19 Pneumonia?

IEEE Access, Vol. 8, 2020, pp. 132665 - 132676

Dataset: COVID-19 Radiography Database from Kaggle

Slide Template: SlidesGo Coronavirus Disease