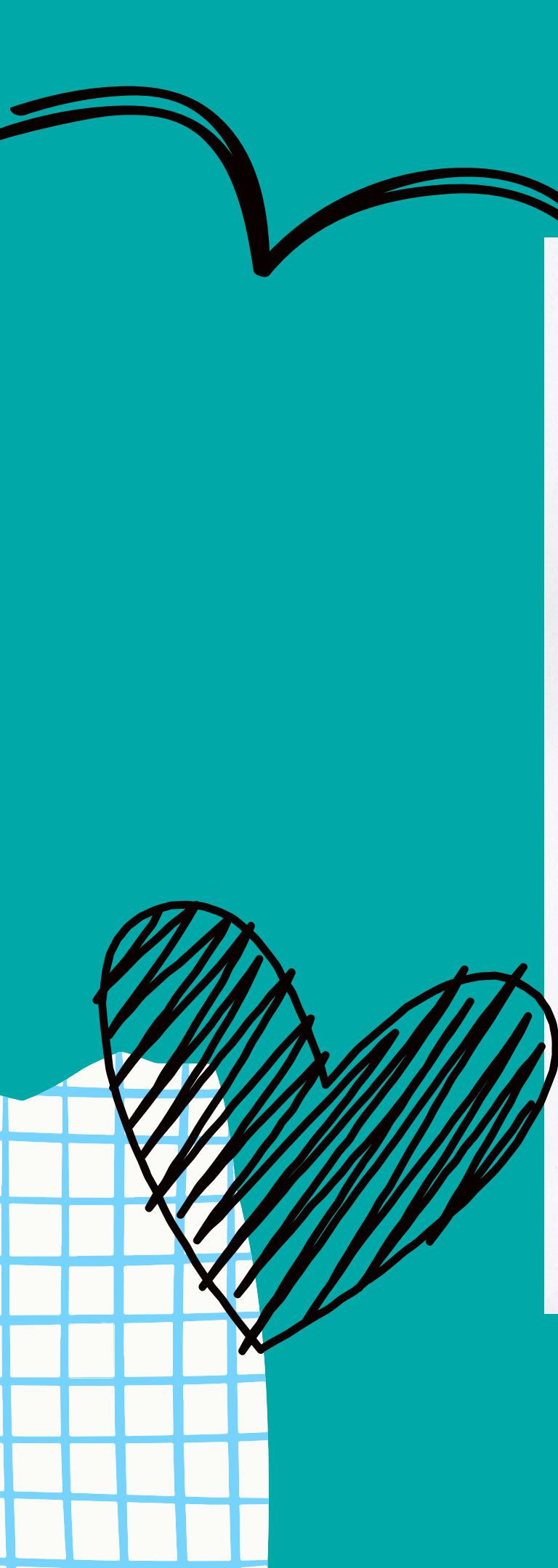


# A Comparative Study Using Machine Learning and Flood Data to Predict Floods

## User Manual

Proponents:

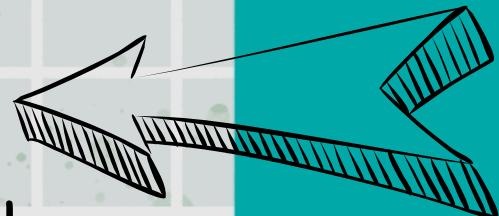
Ariel Dominic Alfonso  
Xier Gabriel Mangunay  
James Edward Q. Vidola

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- 1 Overview
  - 2 Requirements
  - 3 Running the Web App
  - 4 UI/UX

# Overview

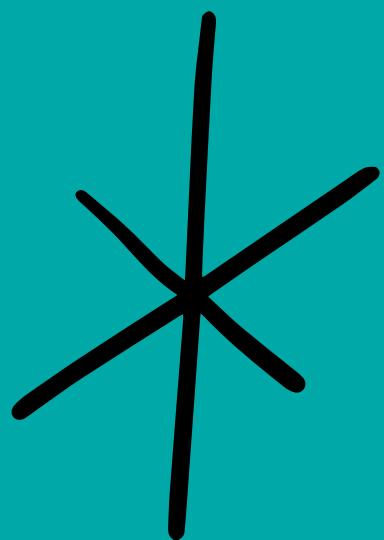
For the Streamlit Application, users will be able to input the required features which are rainfall, temperature minimum, temperature maximum, temperature mean, wind speed and direction, flood height lowest and average for the EFCOS datasets.

As for the MMDA datasets, the required inputs would be elevation, slope, and the weather data. After completing the required inputs, results will be automatically generated for each flood prediction algorithm using the trained model. Flood Height will be generated for the MMDA application while Highest Water Level will be generated for the EFCOS application.





# Requirements



## Anaconda ANACONDA®

Anaconda is a distribution of the Python and R programming languages containing over 1000 source packages and is built for scientific computing purposes, which aims to simplify package management and deployment.

Download Link:

<https://www.anaconda.com/download>

## Streamlit

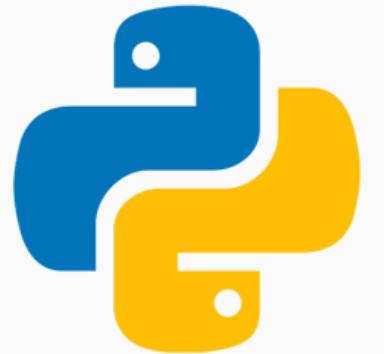
Streamlit is a Python-based open-source app framework that enables quick and elegant web app development for machine learning and data research.

Download link:

<https://docs.streamlit.io/library/get-started/installation>



## Streamlit



## Python

Python is an interpreted, high-level, and object-oriented programming language.

<https://www.python.org/downloads/>



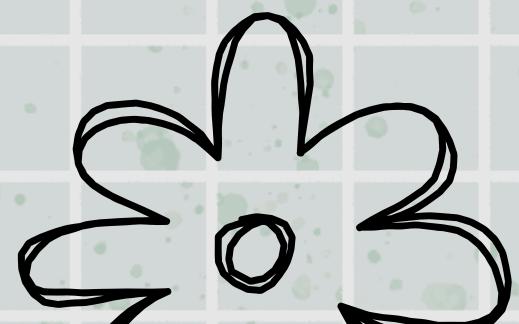
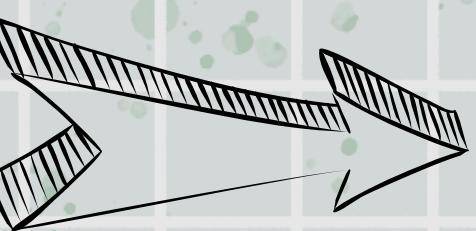
# Running the Web App

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# Source code

download all of the folders in the link:

<https://github.com/AlfonsoAlik/EFCOS-MMDA-File/tree/5358fbb53f903dae5bf243809266e94e99384c66>



EFCOS-MMDA-File Public

5358fbb53f 1 branch 0 tags

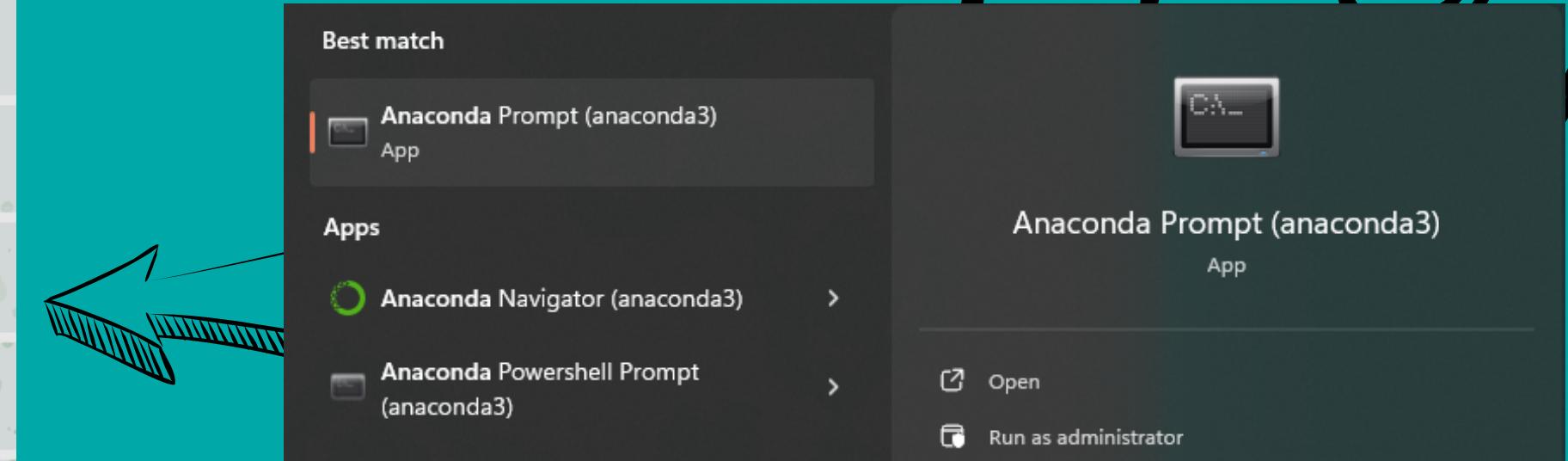
AlfonsoAlik Create README.md 5358fbb 2 weeks ago 4 commits

File/Folder	Action	Created	Last Commit
Angono	Add files via upload	2 weeks ago	2 weeks ago
Flood_Report_rain_no_rain_650	Add files via upload	2 weeks ago	2 weeks ago
Flood_report_rain_no_rain_3200	Add files via upload	2 weeks ago	2 weeks ago
Flood_report_rain_no_rain_random_3...	Add files via upload	2 weeks ago	2 weeks ago
Flood_report_rain_random_no_rain_3...	Add files via upload	2 weeks ago	2 weeks ago
Flood_report_rain_random_no_rain_6...	Add files via upload	2 weeks ago	2 weeks ago
FortSantiago	Add files via upload	2 weeks ago	2 weeks ago
Nangka	Add files via upload	2 weeks ago	2 weeks ago
San Juan	Add files via upload	2 weeks ago	2 weeks ago
Sto.nino	Add files via upload	2 weeks ago	2 weeks ago
jupyter notebooks	Add files via upload	2 weeks ago	2 weeks ago
montalban	Add files via upload	2 weeks ago	2 weeks ago
napindan junction	Add files via upload	2 weeks ago	2 weeks ago
napindan lake	Add files via upload	2 weeks ago	2 weeks ago
pandacan	Add files via upload	2 weeks ago	2 weeks ago
README.md	Create README.md	2 weeks ago	2 weeks ago

# Locating Directories

Open anaconda prompt in the start menu

Direct the link to the project folder using the “cd” command followed by the folder location/name



```
(base) C:\Users\User>cd desktop
```

```
(base) C:\Users\User\Desktop>cd efcos
```

# Running the App

Run poc\_efcos in the command prompt by typing: "python poc\_efcos.py" on the EFCOS files or "python poc.py" without the quotation marks for the MMDA files.

```
(base) C:\Users\User>cd desktop  
(base) C:\Users\User\Desktop>cd efcos  
(base) C:\Users\User\Desktop\efcos>python poc_efcos.py
```

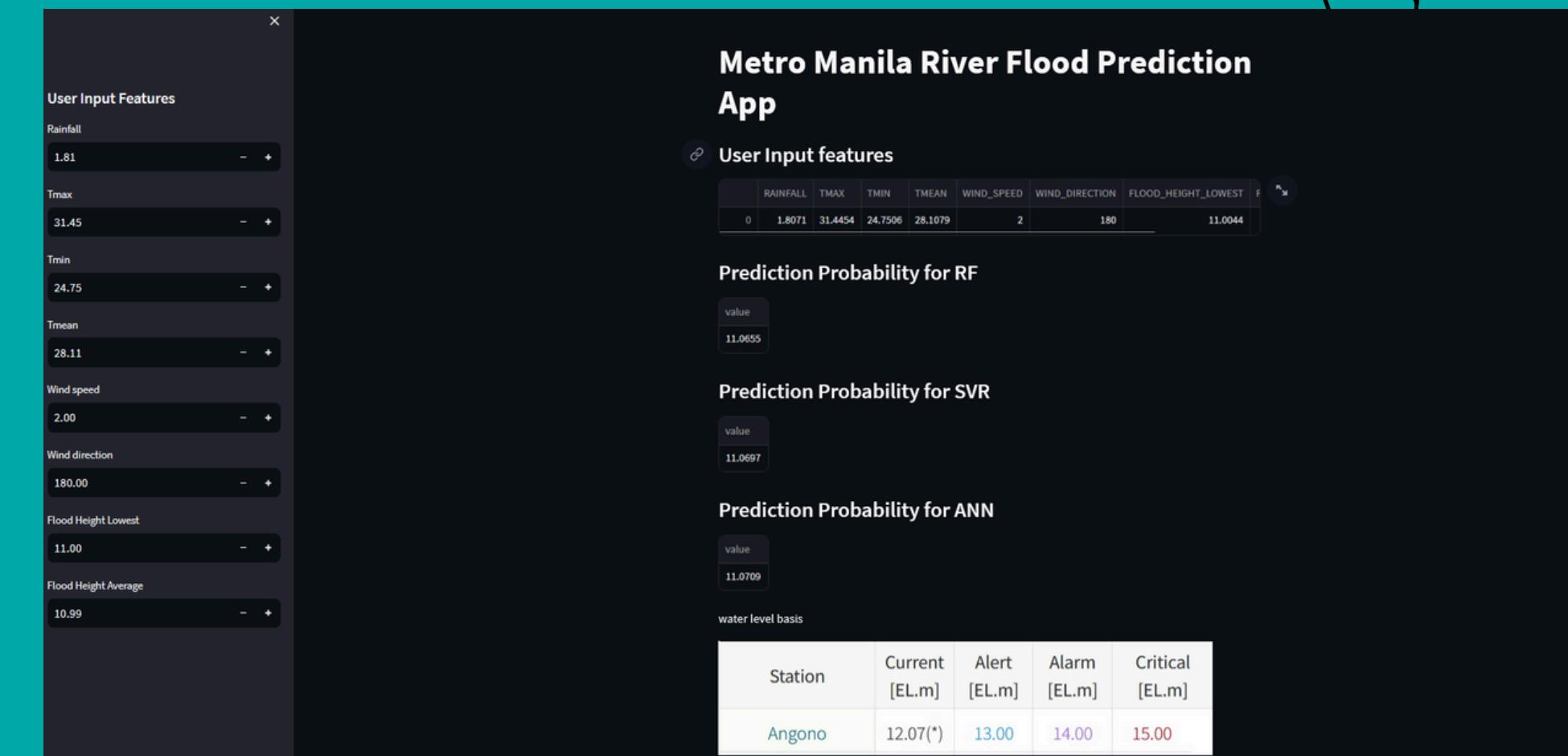
```
(base) C:\Users\User\Desktop\mmda>python poc.py
```

# Running the App

- Run app\_efcos in the command prompt by typing: "streamlit run poc\_efcos.py" on the EFCOS files or "streamlit run poc.py" without the quotation marks for the MMA files.
- You can now view the results on the web application

```
(base) C:\Users\User\Desktop\efcos>streamlit run app_efcos.py
```

```
(base) C:\Users\User\Desktop\mmda>streamlit run app.py
```



# UI/UX

Input features here using  
the keyboard

User Input Features

Rainfall	1.81	- +
Tmax	31.45	- +
Tmin	24.75	- +
Tmean	28.11	- +
Wind speed	2.00	- +
Wind direction	180.00	- +
Flood Height Lowest	11.00	- +
Flood Height Average	10.99	- +

## Metro Manila River Flood Prediction App

### User Input features

	RAINFALL	TMAX	TMIN	TMEAN	WIND_SPEED	WIND_DIRECTION	FLOOD_HEIGHT_LOWEST	F
0	1.8071	31.4454	24.7506	28.1079	2	180	11.0044	F

### Prediction Probability for RF

value
11.0655

### Prediction Probability for SVR

value
11.0697

Results for the random forest,  
Support Vector Machine, and  
Artificial Neural Network will be  
shown here

### Prediction Probability for ANN

value
11.0709

water level basis

Station	Current [EL.m]	Alert [EL.m]	Alarm [EL.m]	Critical [EL.m]
Angono	12.07(*)	13.00	14.00	15.00



Thank you!

