WEATHER CLASSIFICATION BASED ON HO CHI MINH CITY WEATHER DATA

Phan Thanh Hải[1]
18520705

Lê Quang Thắng[2]
16521099

Trương Tấn Sang[3]
18521336

Department of Computer Science, University of Information Technology

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Dr. Nguyễn Lưu Thuỳ Ngân, Dr. Dương Ngọc Hảo

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Chapter 1.
Introduction

1. Introduction

Goal. Develop a weather prediction model by utilizing HCM's 2020 weather data.

Definition.

Input. Time, Temperature, Humidity, Wind, Visibility, etc.

Output. Weather status (e.g., Clear, Partially cloudy, etc.).

Application. Providing information support for efficient planning in:

Meeting Schedules

Event Organization

Sports Activities, etc.

Chapter 2.
Data Analysis
& Preprocessing

2. Data Analysis & Preprocessing

Date time	Temp	Wind Speed	Visibility	Cloud Cover	Relative Humidity	Conditions
1/1/2020 0:00	26	7.6	10	27	67.03	Partially cloudy
1/1/2020 1:00	25.9	9.4	10.2	25.4	73.53	Partially cloudy
1/1/2020 2:00	25	10.1	8	27	71.96	Partially cloudy

8784 samples

7 attributes

Crawl data from

Visual Crossing

80% training data

compared to 20% test data

2. Data Analysis & Preprocessing

Data Cleaning.
Exclude 8 samples with NULL values.

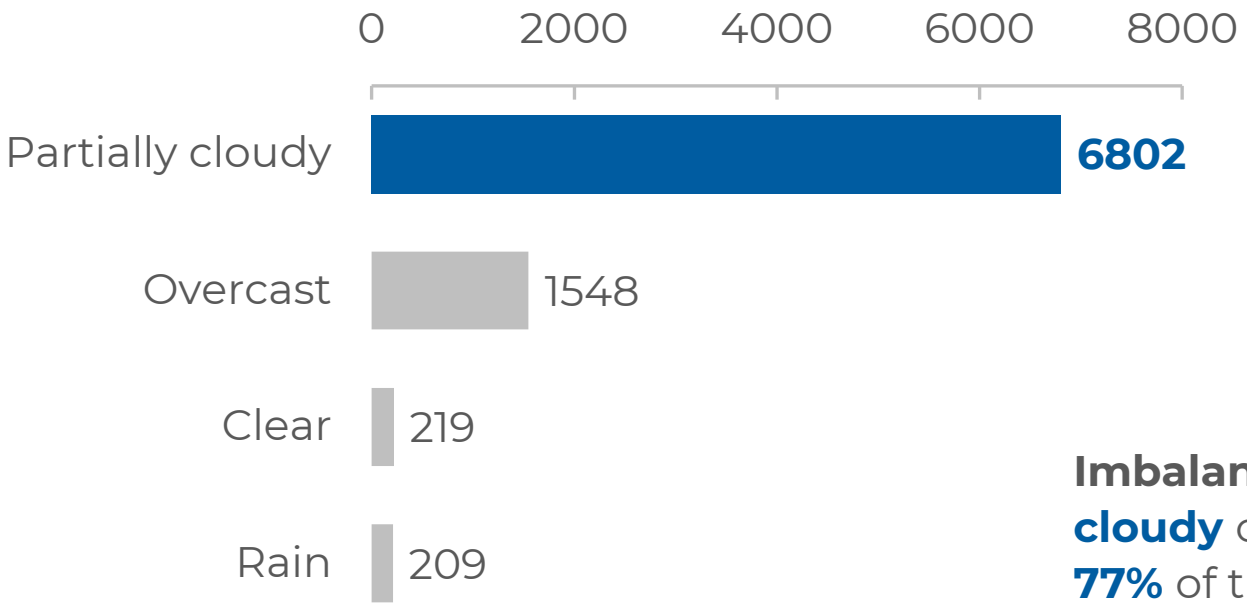
Data Discretization.
Date time and Conditions attributes.

Data Scaling.
Standardization.

2. Data Analysis & Preprocessing

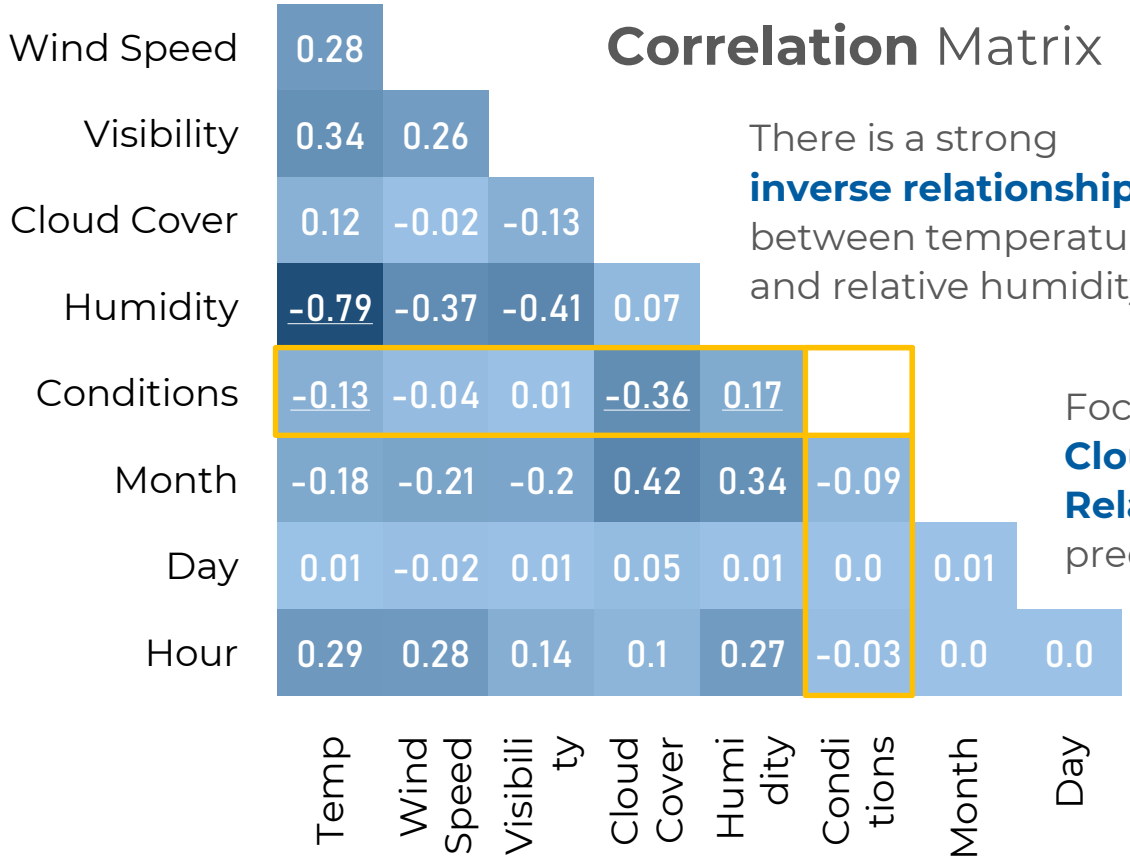
Distribution of Values in the **Conditions** Attribute

Is the dataset **imbalanced** or not?



Imbalanced dataset. **Partially cloudy** comprises slightly over **77%** of the values.

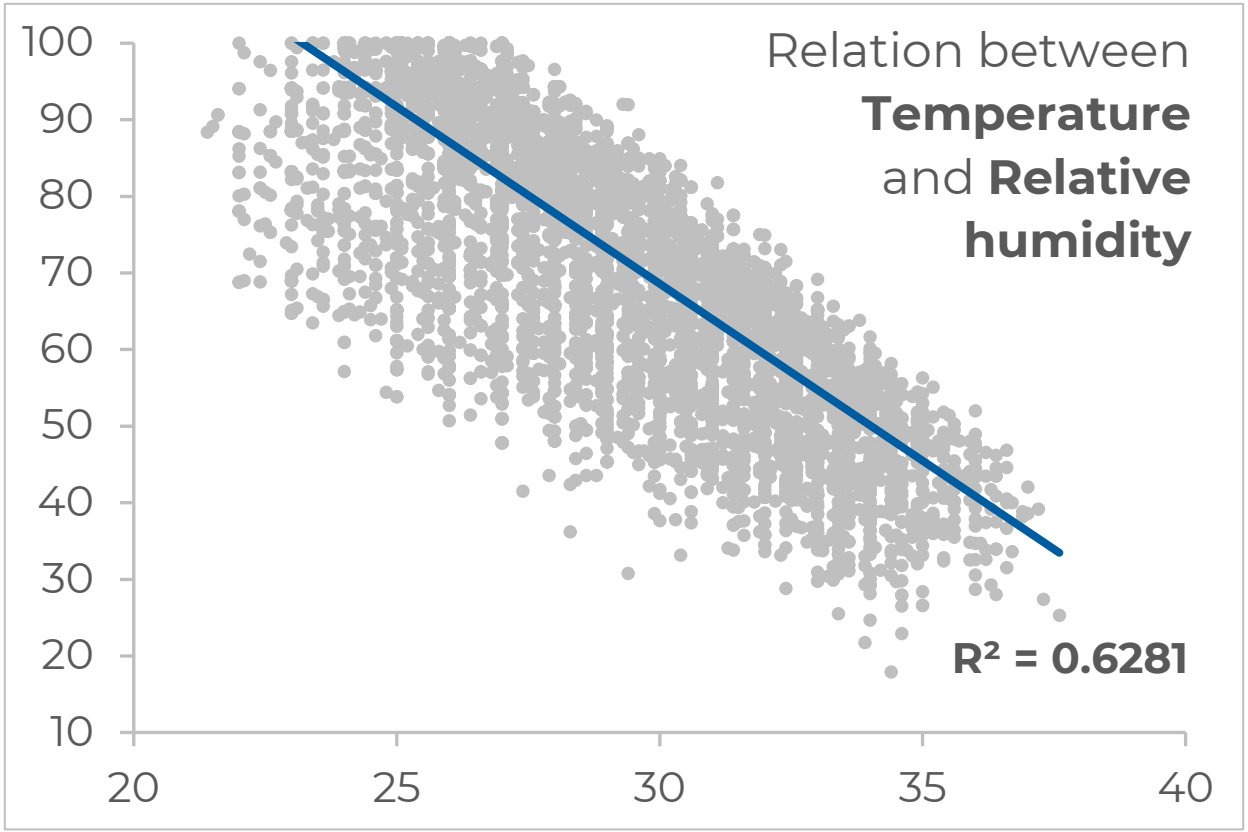
2. Data Analysis & Preprocessing



There is a strong **inverse relationship** between temperature and relative humidity.

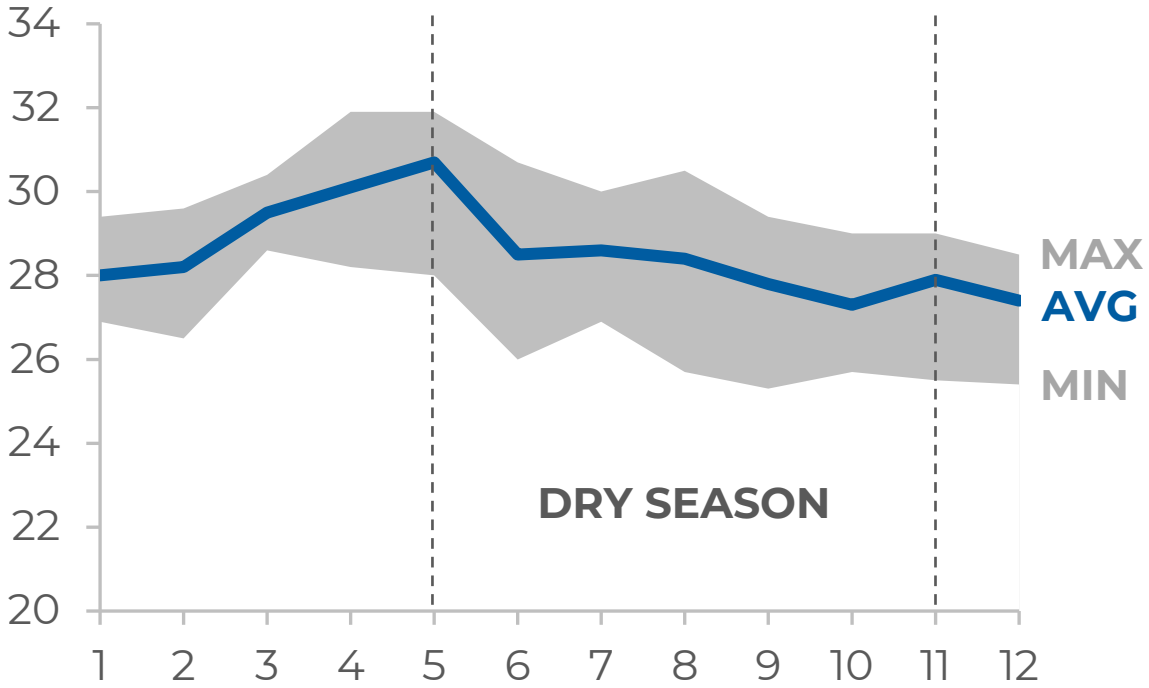
Focus on **Temperature**, **Cloud Cover** and **Relative Humidity** for predicting Conditions.

2. Data Analysis & Preprocessing



2. Data Analysis & Preprocessing

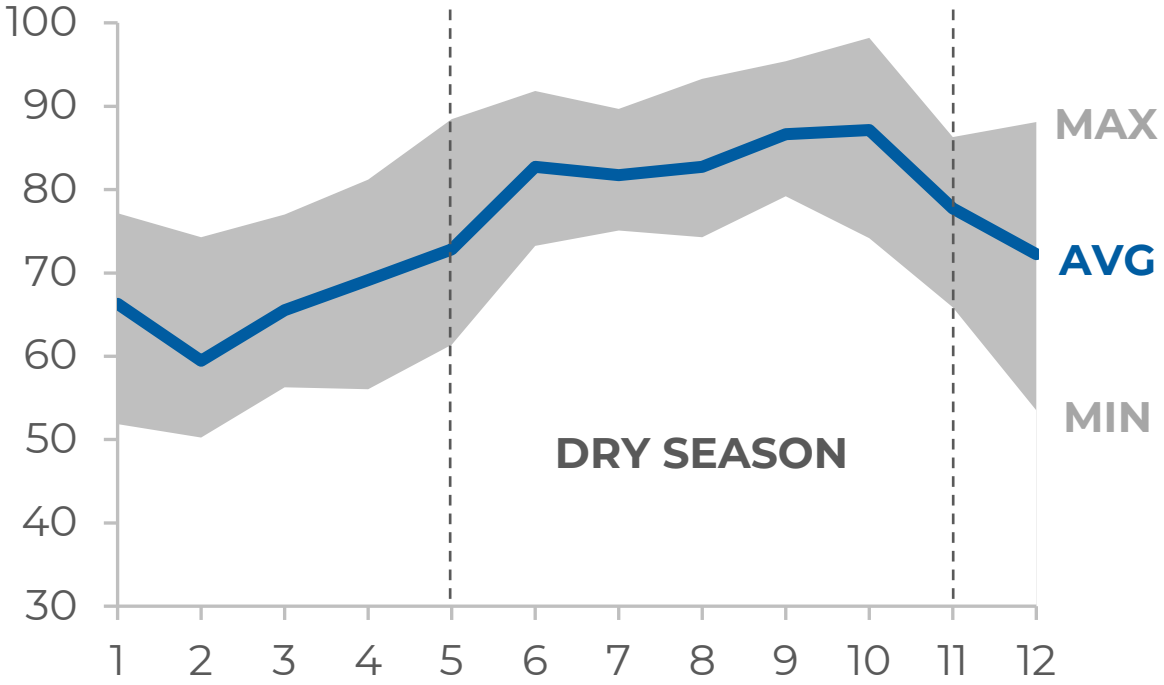
HCMC's 2020 Average Monthly **Temperature**



The city has a **tropical savanna climate** with **high** average temperatures throughout the year.

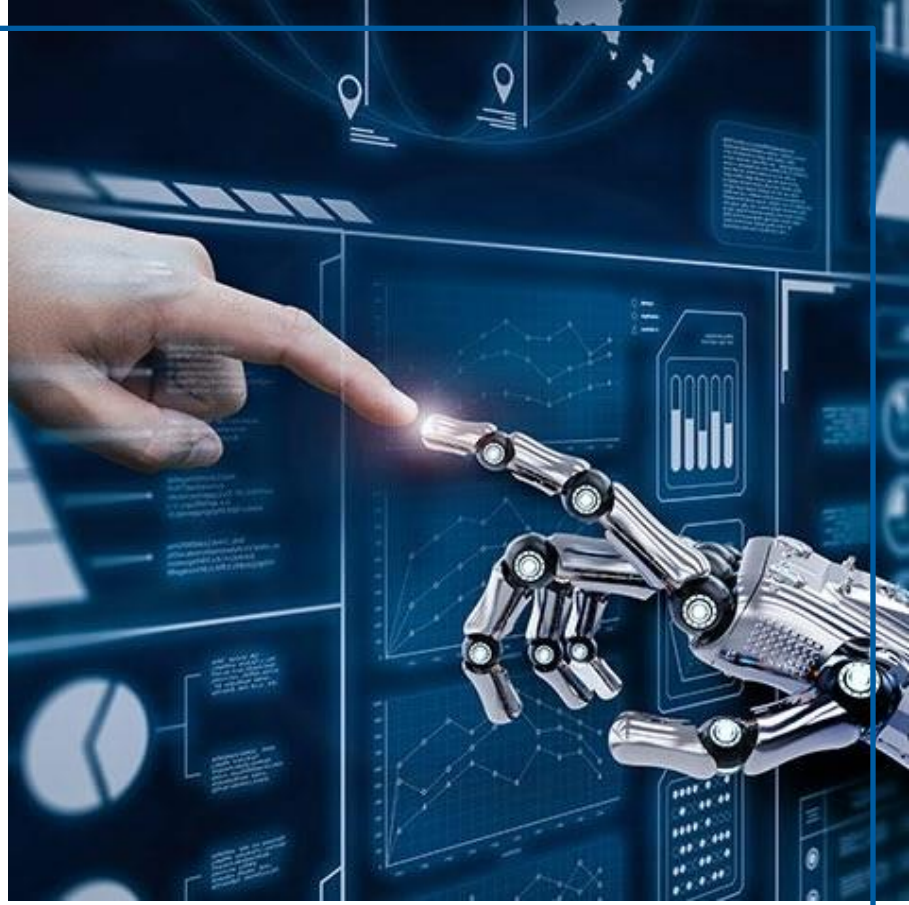
2. Data Analysis & Preprocessing

HCMC's 2020 Average Monthly **Relative Humidity**



The city has a **tropical savanna climate** with **high** moisture content of the air.

Chapter 3. Building Machine Learning Models



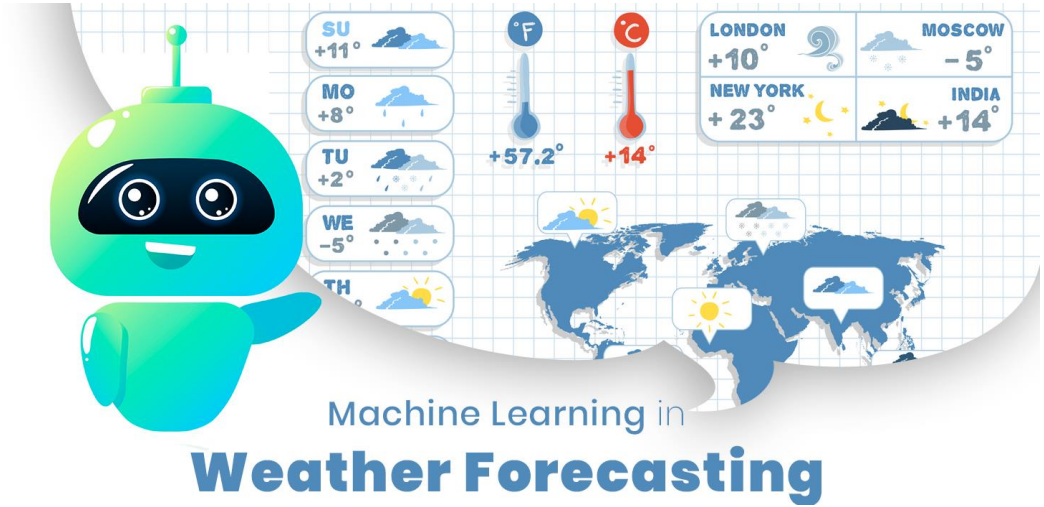
3. Building Machine Learning Models

Mô hình	Macro-average			Weighted-average		
	P	R	F1	P	R	F1
Decision Tree	85.21	89.60	**86.97**	97.83	97.27	**97.51**
Random Forest	92.71	88.82	**90.44**	98.39	98.52	**98.42**
Logistic Regression	73.03	74.98	**73.99**	95.33	97.61	**96.46**
SVM	72.97	73.85	**73.39**	95.22	97.49	**96.34**
K-nearest Neighbor	69.92	67.22	**68.39**	93.58	93.51	**93.52**

04 CONCLUSION

4. Conclusion

- What is **Achieved**?
- What is **Not Achieved**?
- **Future Development** Direction



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GIẢI ĐÁP THẮC MẮC
HỎI XOÁY ĐÁP XOAY