VM2

VM3

Database; Postgres, MySQL, Ms SQL Server, Couch

VM1

Application programming Interface (API) – endpoints; FastAPI

Business logic: classes; Django (python)

Front end (user interface in mobile/web/desktop)

HTML, JavaScript, Django (python)

Pre-trained machine learning model

ORM: Prisma (database structure)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Temperature (High/Low)** | **Windy**  **(True/False)** | **~~Humid~~**  **~~(Yes/No)~~** | **Weather (Hot/Cold/Mild)** |
| 1 | High | True | ~~Yes~~ | Hot |
| 2 | Low | False | ~~No~~ | Cold |
| 3 | High | False | ~~No~~ | Mild |
| 4 | High | True | ~~Yes~~ | Hot |
| 5 | Low | False | ~~No~~ | Cold |
| 6 | Low | False | ~~No~~ | Mild |
| 7 | Hot | No |  | ? |

Decision Trees

Hot (1) Cold (2)

Temp

Wind

Humid

(1965) Shannon => information Theory, entropy (Mathematical formulae)

(1922) Gini => Gini index (Mathematical formulae)

Entropy => information gain

Random Forest

**Classification and regression trees (CART)**

**Speed: 34, 67, 90, 80**

**Random Forest; Breiman (2000)**

**With replacement**

**Optimizing RF: bagging/bootstrap (%age population); depth (4=prune – overfitting/underfitting); no. features (4/10, 7/10, 6/10, 10/10, 13/30)**

**Decision Tree 1 Decision Tree 2 Decision Tree 3 Decision TreeN**

Hot (1) Cold(2)

Temp

Wind

Humid

Hot (1) Cold(2)

Wind

Temp

Humid

Hot (1) Cold(2)

Temp

Wind

Humid