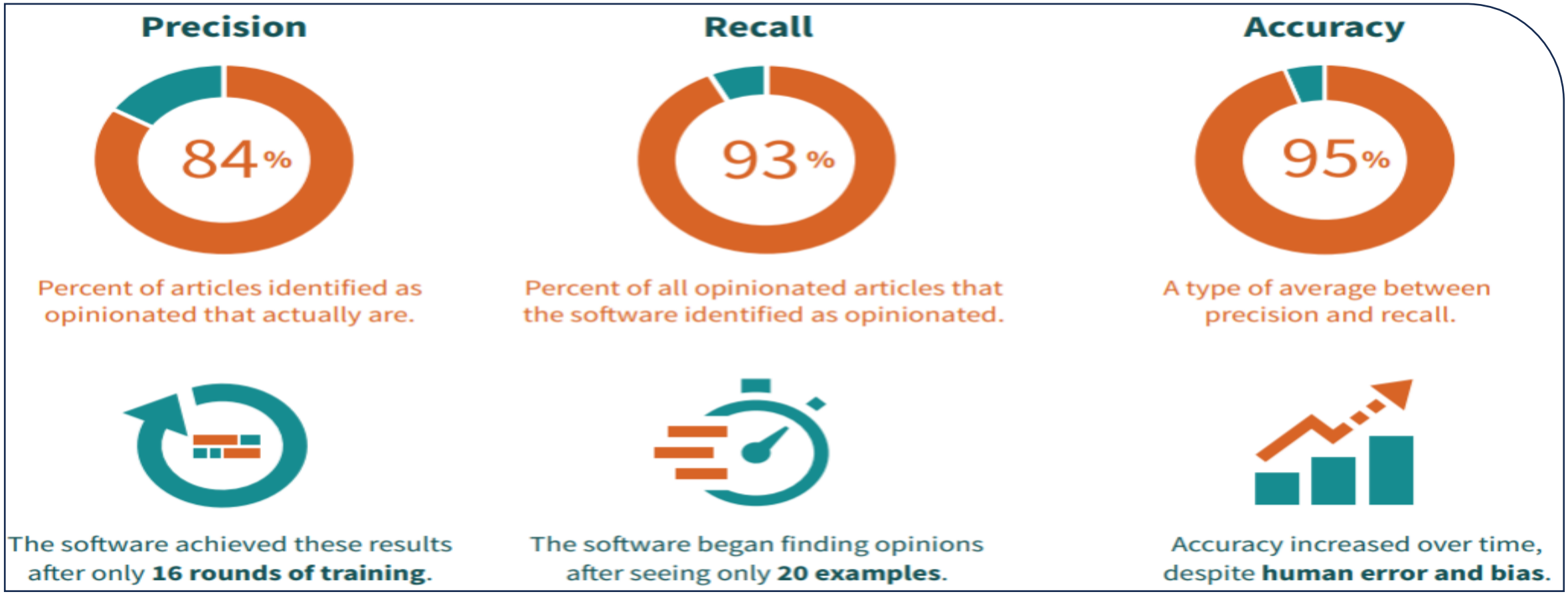
Water Quality Analysis with Machine Learning

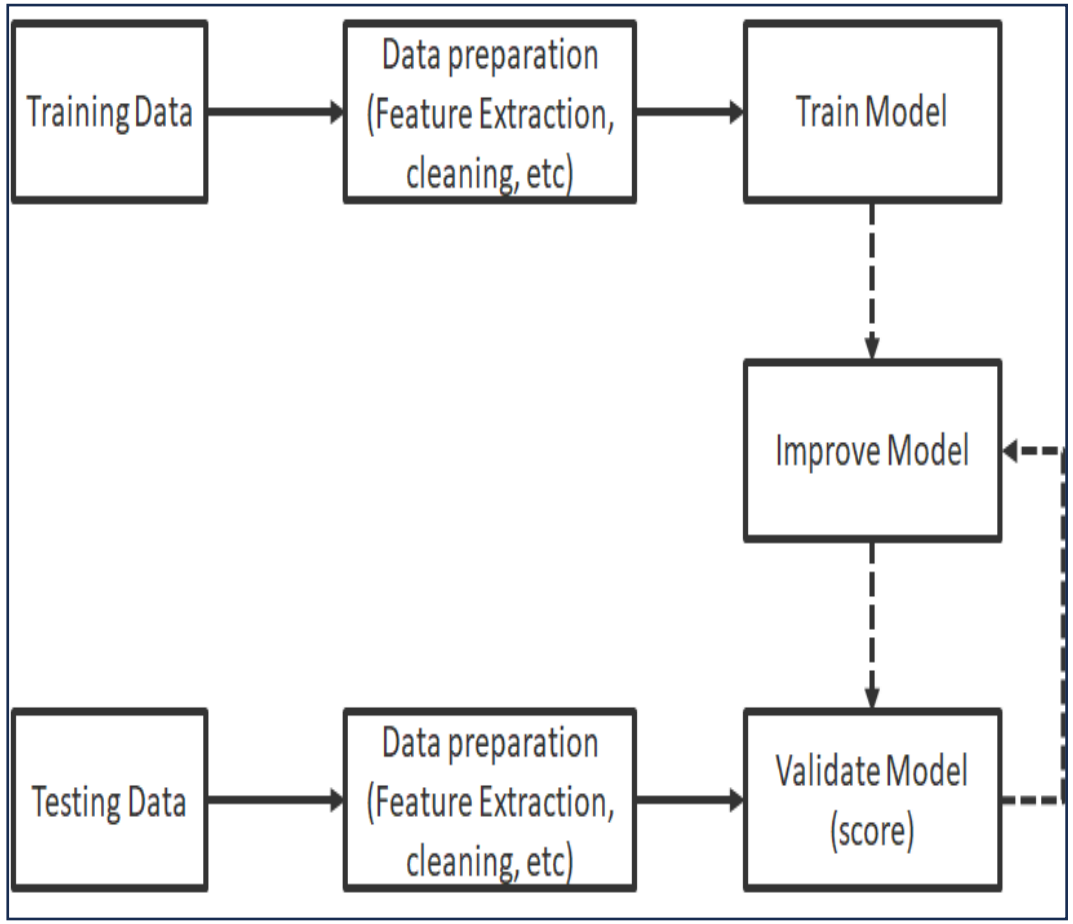
Introduction

- Welcome to the whimsical world of water quality analysis using machine learning! In this journey, we'll explore the magic of data and the wonders it can reveal about water quality using ML model.



Machine Learning Magic

- Our machine learning algorithms work like wizards, analyzing data to predict water quality with astonishing accuracy. It's like having a crystal ball for your water samples!



Dive into the Data

- Let's take a plunge into the deep sea of data! Our algorithms can analyze vast amounts of information, turning raw data into pearls of wisdom about water quality.

- The **water_potability.csv** file contains water quality metrics for 3276 different water bodies.

water_potability.csv

- pH value:
- PH is an important parameter in evaluating the acid–base balance of water. It is also the indicator of acidic or alkaline condition of water status.
- WHO has recommended maximum permissible limit of pH from 6.5 to 8.5. The current investigation ranges were 6.52–6.83 which are in the range of WHO standards.

- Hardness:
- Hardness is mainly caused by calcium and magnesium salts. These salts are dissolved from geologic deposits through which water travels.
- The length of time water is in contact with hardness producing material helps determine how much hardness there is in raw water. Hardness was originally defined as the capacity of water to precipitate soap caused by Calcium and Magnesium.

- Solids (Total dissolved solids - TDS):
- Water has the ability to dissolve a wide range of inorganic and some organic minerals or salts such as potassium, calcium, sodium, bicarbonates, chlorides, magnesium, sulfates etc.
- These minerals produced un-wanted taste and diluted color in appearance of water.The water with high TDS value indicates that water is highly mineralized. Desirable limit for TDS is 500 mg/l and maximum limit is 1000 mg/l which prescribed for drinking purpose.

- Chloramines:
- Chlorine and chloramine are the major disinfectants used in public water systems. Chloramines are most
- commonly formed when ammonia is added to chlorine to treat drinking water. Chlorine levels up to 4 milligrams per liter (mg/L or 4 parts per million (ppm)) are considered safe in drinking water.
- Sulfate
- Conductivity
- Organic_carbon
- Trihalomethanes
- Turbidity
- Potability

Whimsical Results

- Behold the whimsical results! Our machine learning models not only provide accurate predictions but also sprinkle a bit of magic to make the results fun and engaging.
- Access to safe drinking-water is essential to health, a basic human right and a component of effective policy for health protection. This is important as a health and development issue at a national, regional and local level. In some regions, it has been shown that investments in water supply and sanitation can yield a net economic benefit, since the reductions in adverse health effects and health care costs outweigh the costs of undertaking the interventions.

Conclusion

- As we wrap up this whimsical water quality journey, remember that analyzing water quality can be both enlightening and entertaining. Dive deep, explore the data, and let the magic unfold!

THANK YOU