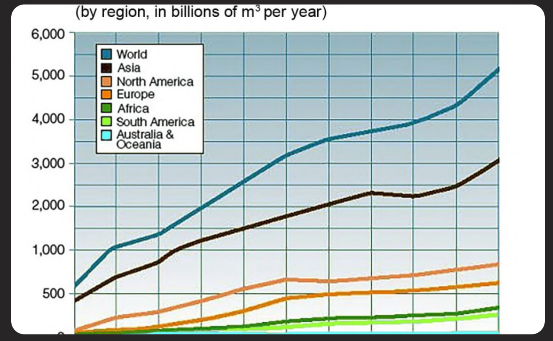
INTEL ONEAPI HACKATHON

Freshwater Quality Prediction: A Data-Driven Approach

Freshwater Quality Prediction

Scarcity of Freshwater

With only 3% of the earth's water being freshwater, ensuring its quality is crucial for human and ecological well-being.



Provided Dataset

Explore a comprehensive dataset with 5,956,842 rows and 23 columns to predict the suitability of water for consumption.

Data Analysis Approach

Apply advanced techniques to analyze the dataset, identify patterns, and uncover insights into water quality indicators.

Data Cleaning

Missing Values

By imputing missing values based on feature importance, we preserved the integrity of the dataset.

Feature Selection

We dropped irrelevant columns to optimize the prediction of water quality, ensuring accuracy and efficiency.

Model Training

Model Experimentation

Explore a range of models, including logistic regression, random forest classifier, XGBoost, and DNN, to find the best fit for predicting water quality.

F1 Score Comparison

Evaluate the performance of different models based on their F1 score, training time, and accuracy.

Intel AI Analytics Toolkit

Leverage the power of the Intel AI Analytics Toolkit to optimize computations and enhance model efficiency.

Model Evaluation

1

XGBoost

Shortest training time, evaluated based on F1 score and AUC-ROC score.

2

Random Forest Classifier

Highest accuracy achieved, consider practicality for model size.

3

DNN

Good accuracy with lower storage size

4

Logistic Regression

very low time with nominal accuracy

Conclusion

1 Insights into Freshwater Quality

Gain valuable insights into predicting freshwater quality, a fundamental aspect of our daily lives.

2 Random Forest Classifier

Identify the model with the highest accuracy, ensuring reliable predictions for water quality.

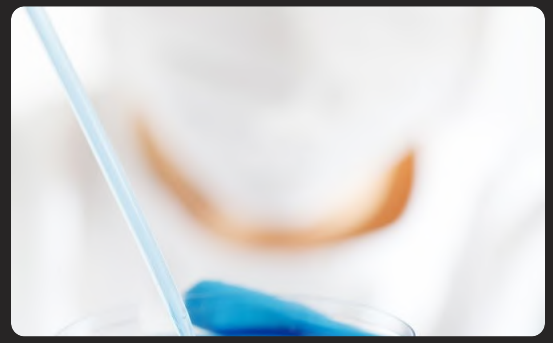
3 Training Efficiency

Consider the trade-off between model training time and accuracy, optimizing the prediction process.

Call to Action

Stay Informed

Learn more about freshwater conservation and its impact on our ecosystems.



Be Part of the Solution

Engage in research, innovation, and collaboration to address the global freshwater crisis.

Advocate for Change

Support policies and initiatives that aim to protect and improve freshwater resources for future generations.

Thank You!

Your participation in this hackathon contributes to the advancement of freshwater quality prediction. Together, we can make a difference!