

Wastewater quantity and quality prediction for Heidelberg WWTP using Machine Learning

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Background

- The city of Heidelberg has a combined sewer system to collect rainwater and sewage.
- The quantity of rainfall has an impact on the quantity and quality wastewater collected.
- A wastewater treatment plant is designed to cater to this variation.

Objective

- The objective is to develop a program that can provide a forecast for a period of 14 days the quality and quantity of wastewater to the treatment plant.
- Data driven decision making using predictive algorithm are becoming more and more important in the current uncertain situation.
- Employing machine learning, the historical data is used to provide predictive models.

Methodology

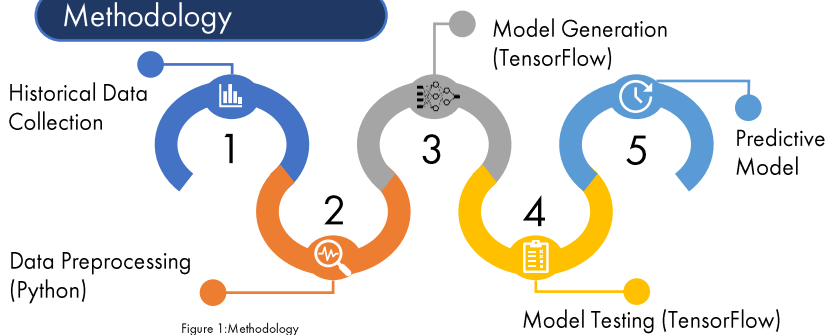


Figure 1: Methodology

Application

- Improved operation of wastewater treatment plant.
- Analysis of climate change impact on treatment plant and checking upgradation requirement.
- Design and construction of wastewater treatment plant.
- Selection of working standby configurations of unit operations and unit process.

Outlook

- Collection of wastewater quantity and quality data on hourly basis for improving the model.
- Development of accurate weather monitoring and predicting system for improving the prediction.

Model

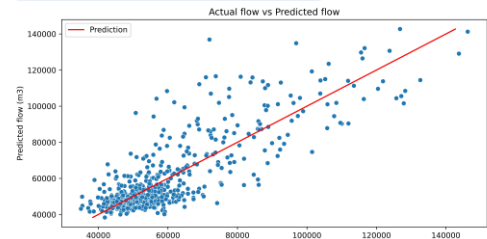


Figure 2: Actual flow vs predicted flow from the developed model

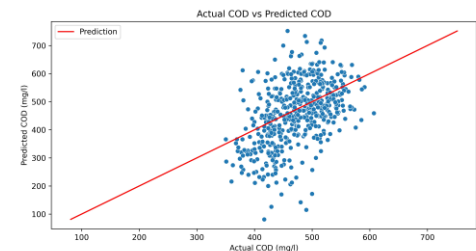


Figure 3: Actual COD vs predicted COD from the developed model

Predicted Output

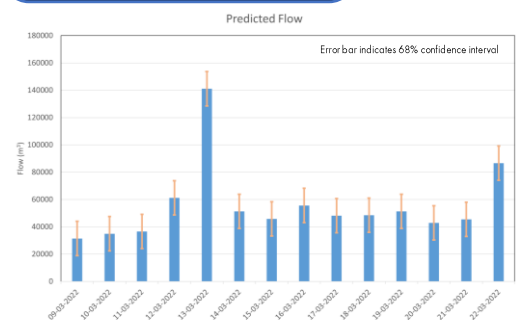


Figure 4: Predicted flow for days 09-03-2022 to 22-03-2022

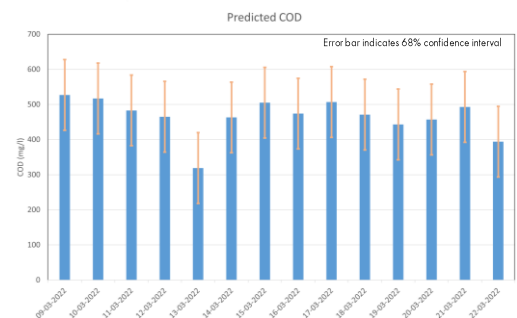


Figure 5: Predicted COD for days 09-03-2022 to 22-03-2022



Scan for further information