

Data Analysis & Visualization of Heavy Machinery Data Using Snowflake

- Case Study

Problem Statement

The company wishes to analyze Industrial level Machinery behavior with various analytical approaches by using it's raw data, this will help companies to identify the behavior patterns under different conditions well in advance and be able to take upfront action in order to prevent these Machinery damages

Use Cases

- **Early Failure Detection:** The organization wants to develop a process to analyze raw data from these heavy instruments to find the status of them. This process will help the companies to identify the failure or any defects well in advance, hence there are no sudden machine failures, and they have well advance time to do maintenance
- **Optimizing Performance & Maintenance Cost:** This Analysis will help to identify the best optimizing way to leverage the Machinery performance, this process also plays a major role to reduce the maintenance overhead cost and reduce the manual maintenance burden.

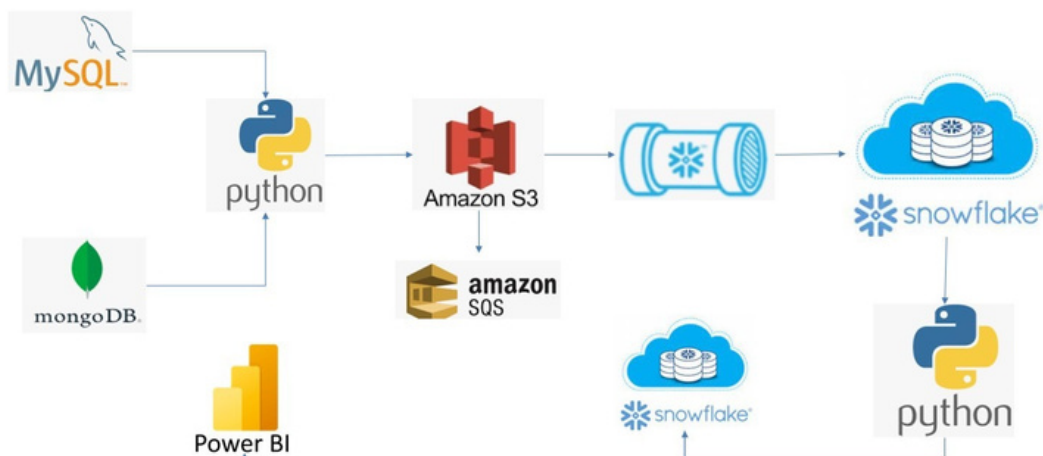
Tools & Technologies

- AWS
- Snowflake
- Python
- Mysql
- MongoDB
- Power BI

Benefits

- Advance Alerting System
- Centralized Monitoring System
- Less Human Intervention

Project Architecture



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Our Approach

- **Extract:**
 - Extracting data from the source(sensors push data to MySQL & MongoDB)
 - Using Python script to connect to sources to extract data
- **Load:**
 - Load the extracted raw data into snowflake tables
 - Creating Snowpipe for continued data integration
- **Transform:**
 - Apply required techniques such as Cleansing, Standardizing, Duplicates remove, and multiple Stored Procedures.
- **Analysis:**
 - Connect with Snowflake using Python
 - Generate Analysis based output for models
 - Creating Threshold-based alerts
 - Push final model output to the Production table
- **Report:**
 - Generate PowerBI report for Visualisation
 - Connect to Powerbi Using snowflake