

PROCESS OF DATABASE CREATION FOR ANOMALY DETECTION PROJECT

1.0 Overview

This document outlines the steps required to create and manage a SQLite database for the Anomaly Detection project. The database will store sensor data from CSV files, which will be used by a Shiny application to filter and visualize the data.

2.0 Prerequisites

R and RStudio installed

Shiny package installed

SQLite database engine installed

Required R packages: shiny, shinydashboard, shinyjs, DT, RSQLite, readr, dplyr, ggplot2

3.0 Steps to Create and Manage the Database

Step 1: Setup the Shiny App to Upload CSV and Create Database

a) Create the Shiny App

- a. Create a new R script file (e.g., app_upload.R).
- b. Write the following code to create a Shiny app that uploads a CSV file and saves it to a SQLite database.

https://github.com/afiqhelmi/wafer_anomaly_detection/blob/d5b5c1c6285891e989e33b06894aeff7b2cc03ce/upload_to_database.R

b) Run the Shiny App

- a. Open the R script in RStudio.
- b. Click the "Run App" button to start the Shiny app.
- c. Upload a CSV file to create the database and the sensor_data table.

Step 2: Setup the Shiny App to Retrieve Data from the Database

a) Create the Shiny App

- a. Create a new R script file (e.g., app_visualize.R).
- b. Write the following code to create a Shiny app that retrieves data from the SQLite database and allows for filtering and visualization.

https://github.com/afiqhelmi/wafer_anomaly_detection/blob/d5b5c1c6285891e989e33b06894aeff7b2cc03ce/visualize_data.R

[b/d5b5c1c6285891e989e33b06894aeff7b2cc03ce/anomaly_detection.R](https://github.com/d5b5c1c6285891e989e33b06894aeff7b2cc03ce/anomaly_detection.R)

Justification for Choosing SQLite Database for the Anomaly Detection Project

SQLite is an excellent choice for the anomaly detection project due to its lightweight nature, ease of use, portability, and sufficient performance for the application's needs. Its integration with R, reliability, and wide adoption further justify its selection, providing a robust and efficient solution for managing and visualizing sensor data within the Shiny application.