Creating a data visualization dashboard for monitoring key metrics and performance indicators in a manufacturing plant

DS5110 Project: Iteration #02

Qingyuan Hu, Yunmu Shu

1 Project Kickoff

1.1 Clearly state your project goals

Creating a data visualization dashboard for monitoring key metrics and performance indicators in a manufacturing plant.

1.2 Define your project scope

The scope includes:

- Identifying and collecting relevant datasets that simulate or represent manufacturing KPIs
- Data preprocessing, cleaning, and structuring for visualization.
- Designing a dashboard interface with interactive charts and KPIs.
- Hosting the dashboard either locally or via a cloud service if available(maybe)

1.3 Outline expected deliverables and milestones

- **June 21**: Define metrics and find datasets.
- **July 5**: Complete data cleaning and preprocessing.
- **July 19**: Develop visualizations and dashboard wireframes.
- **Aug 2**: Final dashboard prototype with interactivity.
- **Aug 16**: Final submission with documentation and presentation.

1.4 Indicate timeline and dataset(s) selected

We plan to complete the project over a 10-week timeline. For the dataset, we are currently exploring options such as:

- The Kaggle dataset "Manufacturing Process Data" (public and downloadable).
- Simulated datasets generated to mimic sensor logs and machine outputs.

1.5 Reflect on whether your team is ready or has gaps in expertise

We are confident in our core programming and data analysis skills. However, we may need to deepen our knowledge of dashboard frameworks (e.g., Plotly Dash, Power BI, or Tableau) and cloud deployment for real-time interaction.

2 Team Discussions

2.1 List the core skills of each team member

Qingyuan Hu:

-
-
-

Yunmu Shu:

- Java, React, Python
- Experience in REST APIs and frontend UI

2.2 Assign responsibilities based on strengths

Qingyuan will focus on:

-

Yunmu will focus on:

- Dashboard integration and frontend design
- API setup and interactivity

2.3 Identify any skill gaps

We may need external guidance on:

- Deploying dashboards on cloud platforms(TBD)
- Real-time data streaming and live updates (e.g., WebSockets)

2.4 Mention selected programming languages and platforms

We will use:

- Python for data processing
- JS+CSS+HTML dashboard frontend
- GitHub for collaboration and version control

3 Skills and Tools Assessment

3.1 List tools and frameworks to be used

3.2 Identify any external resources if any

3.3 Clarify task assignment and role clarity

4 Submission for This Iteration

4.1 List specific tasks completed in this phase

4.2 Document challenges, solutions, and any plan changes

4.3 If your data is hosted online, provide the data link

4.4 Confirm the Excel tracker is complete and included

5 template

5.1 XXX

1. Short-term goal 1.
2. Short-term goal 2.
3. Short-term goal 3.

5.2 XXX

1. Long-term goal 1.
2. Long-term goal 2.
3. Long-term goal 3.