Business Analytics Practicum (MGT 4803)

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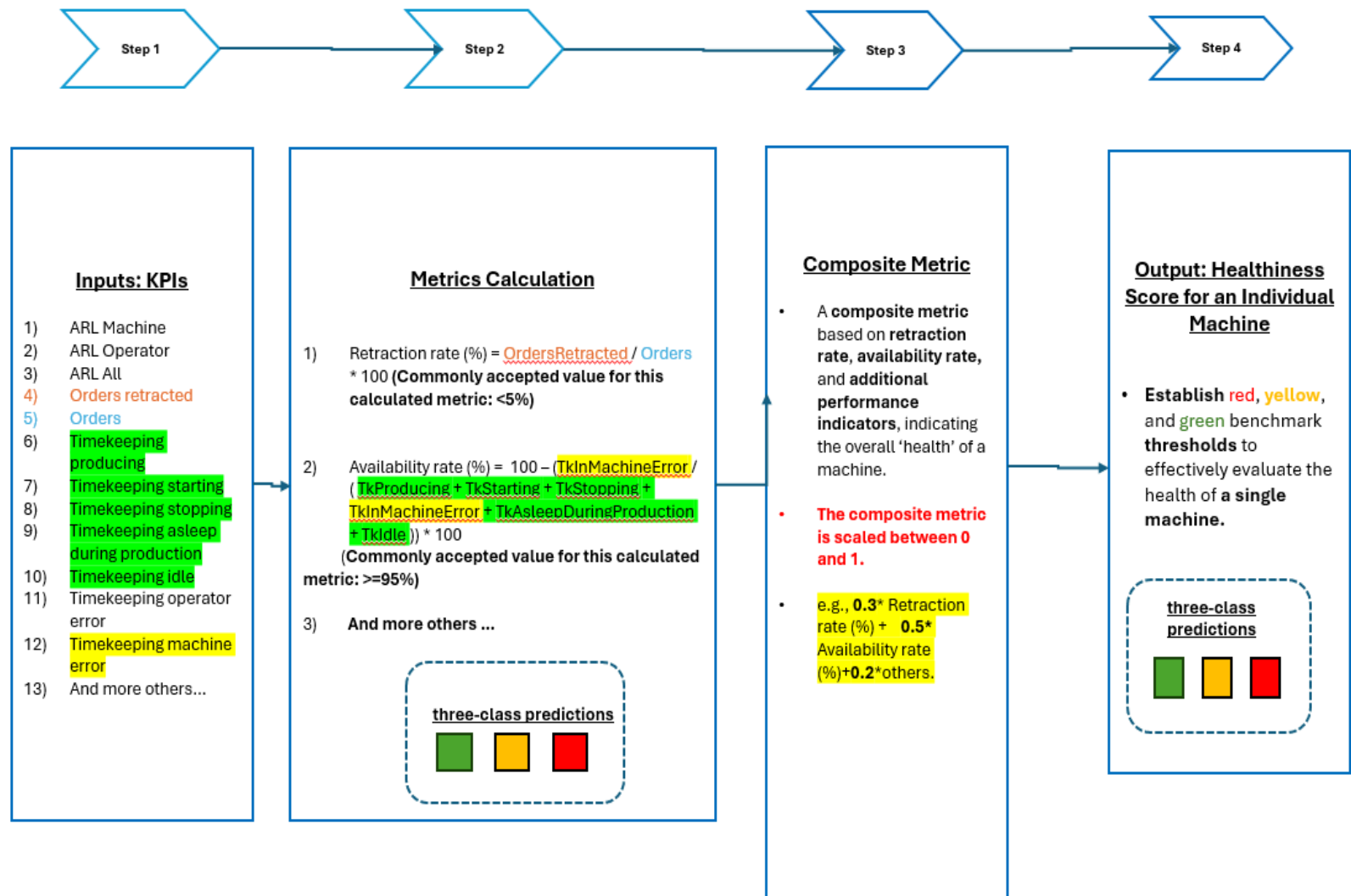
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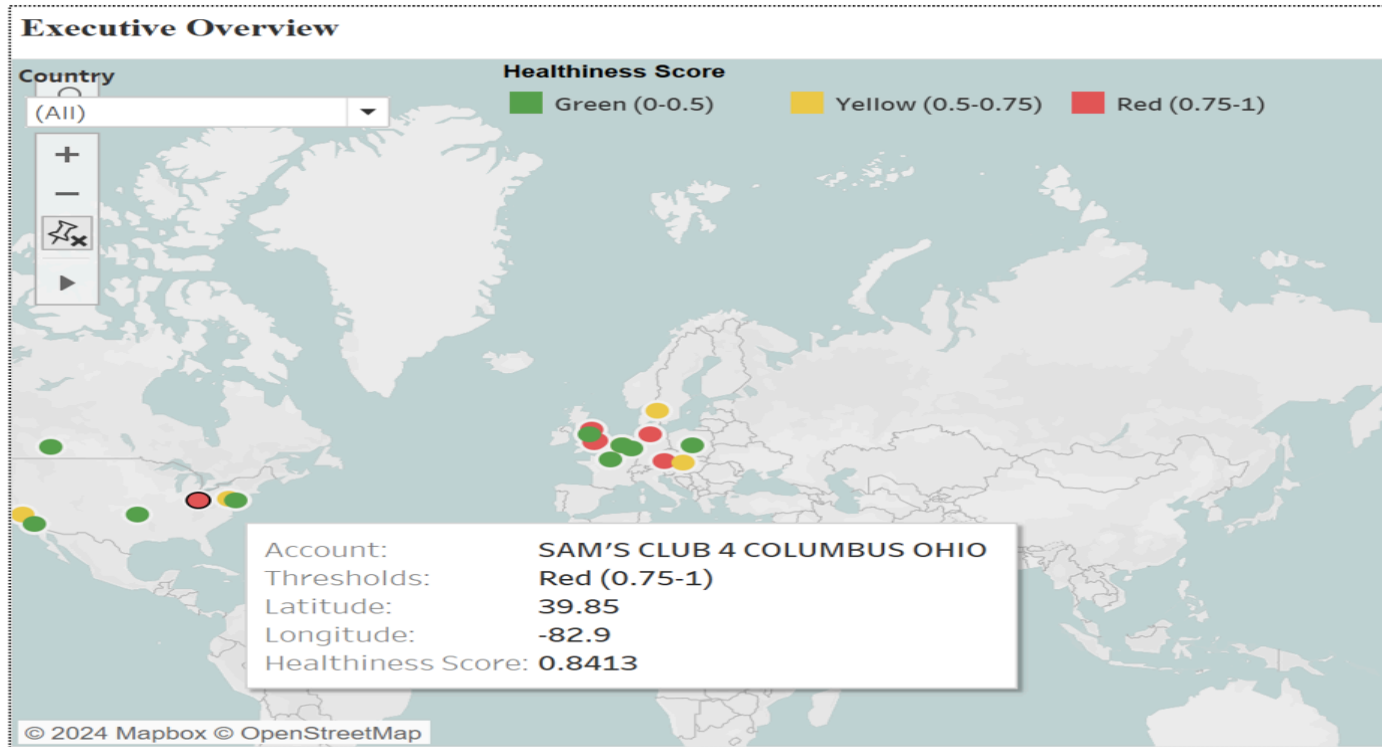
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Flowchart overview of the healthiness score framework

Step 1 → **Step 2** → **Step 3** → **Step 4**

Inputs: KPIs

1) ARL Machine
2) ARL Operator
3) ARL All
4) Orders retracted
5) Orders
6) Timekeeping producing
7) Timekeeping starting
8) Timekeeping stopping
9) Timekeeping asleep during production
10) Timekeeping idle
11) Timekeeping operator error
12) Timekeeping machine error
13) And more others…

Metrics Calculation

1) Retraction rate (%) = OrdersRetracted / Orders * 100 **(Commonly accepted value for this calculated metric: <5%)**

2) Availability rate (%) = 100 – (TkInMachineError / (TkProducing + TkStarting + TkStopping + TkInMachineError + TkAsleepDuringProduction + TkIdle)) * 100 **(Commonly accepted value for this calculated metric: >=95%)**

3) **And more others …**

three-class predictions

Composite Metric

- A **composite metric** based on **retraction rate, availability rate,** and **additional performance indicators**, indicating the overall 'health' of a machine.

- **The composite metric is scaled between 0 and 1.**

- e.g., **0.3*** Retraction rate (%) + **0.5*** Availability rate (%)+**0.2***others.

Output: Healthiness Score for an Individual Machine

- **Establish** red, yellow, and green benchmark **thresholds** to effectively evaluate the health of **a single machine.**

three-class predictions

Metrics used

- **Retraction rate**

  - **Availability rate**

  - **Order completion rate**

  - **and more..**

High-level understanding of the architecture through dashboard

- Please click on the link provided below
  - Executive Overview (Demo)

How can we make the dashboard better to get the whole story?

How can we make the dashboard better to get the whole story? **KPIs?...**

- **How can we assess and report the production health of all Sparck machines broadly and individually?**

  - What KPIs and Metrics are the most important for machine performance?

  - What thresholds (Red /Yellow/Green) can Sparck use to assess the machines health?

  - What makes a high vs. low performing machine?

- **How can we assess and report the machine events and errors of all Sparck machines broadly and individually?**

    - What events are considerate high vs. low impact?

    - What events correlate to high vs. low performing machine?