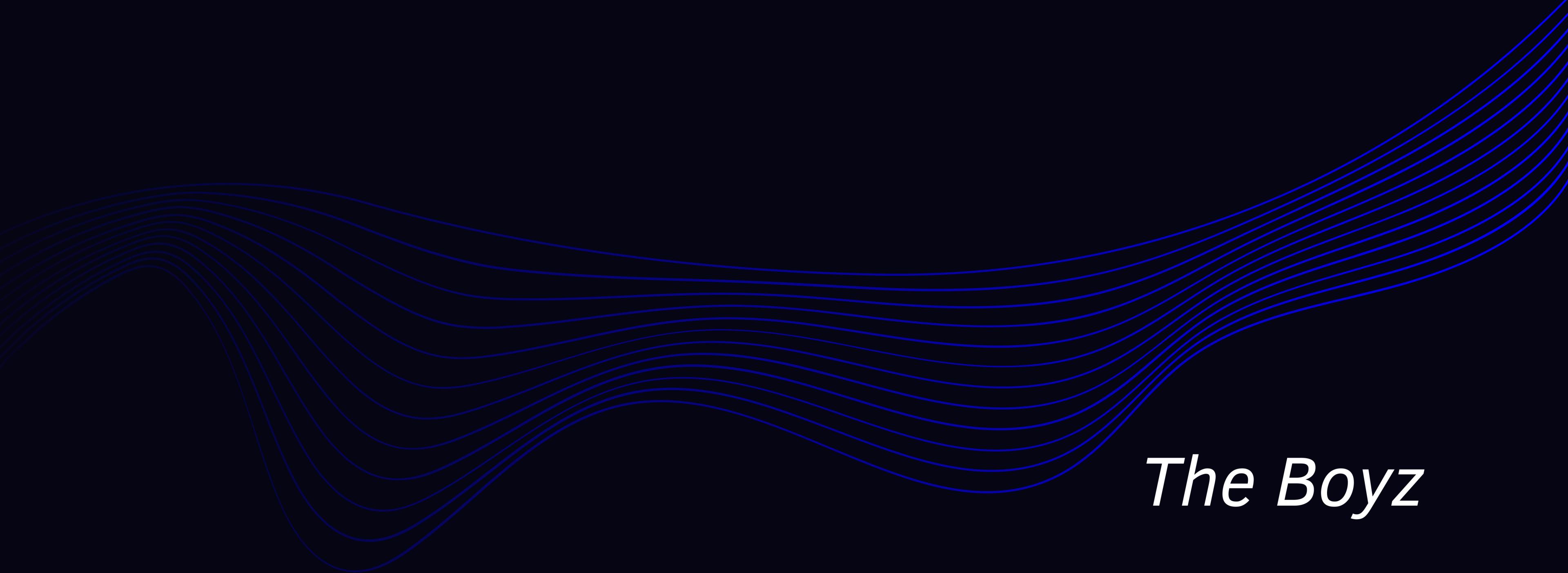


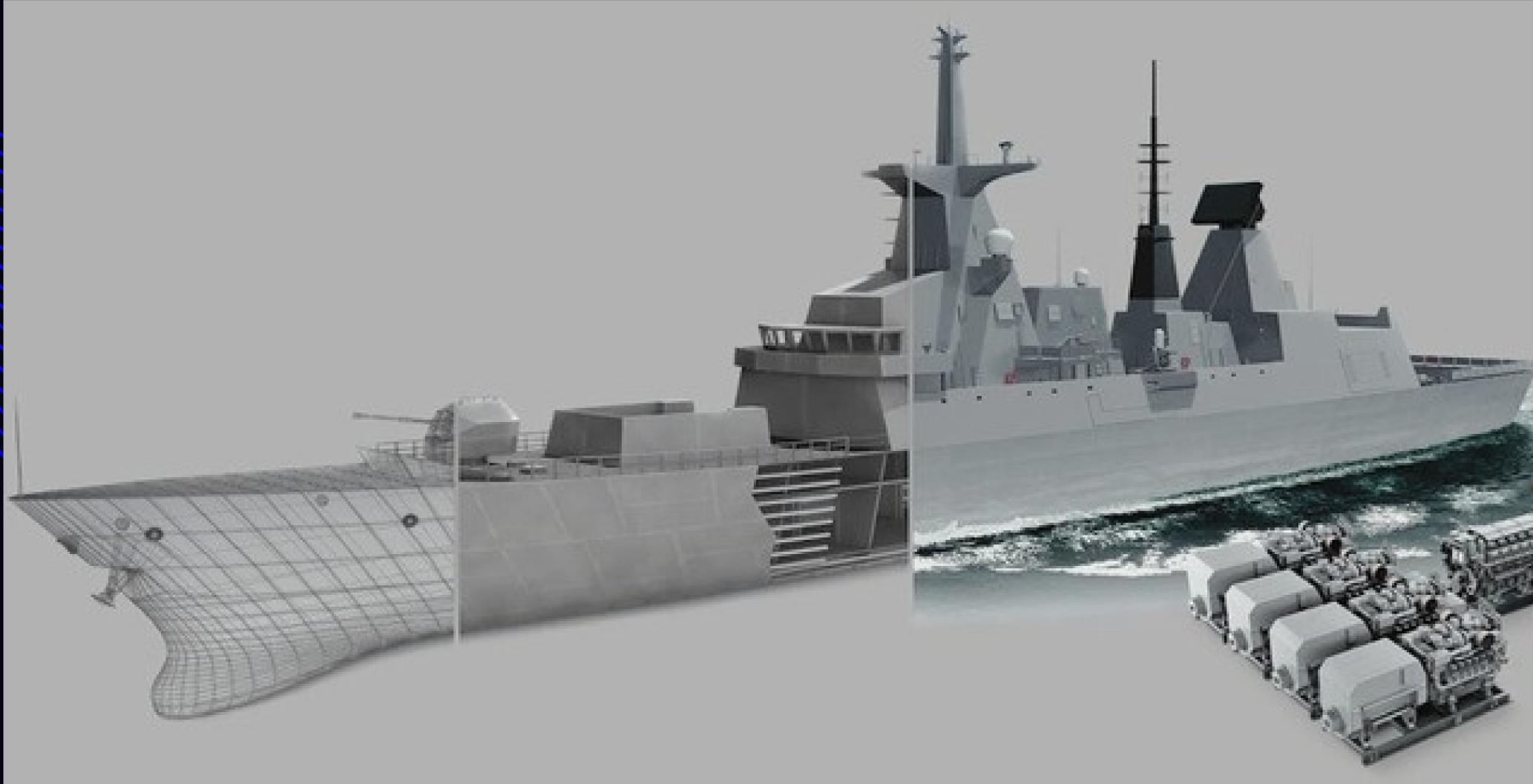
Marintec & UTS Rapido Hackathon

01



The Boyz

02



UTS-Hackathon

Challenge

Build a system to assist crew on a naval ship in diagnosing and determining actions following alarms from the ship's primary engine

03

METHODOLOGIES

REGULAR EXPRESSION (REGEX)

Advantages:

- Easy Integration With Existing Systems
- Reusable
- Supported By Many Prog. Languages

Disadvantages:

- Not Semantic
- Worse Data Readability
- Not Scalable

RETRIEVAL-AUGMENTED GENERATION (RAG)

Advantages:

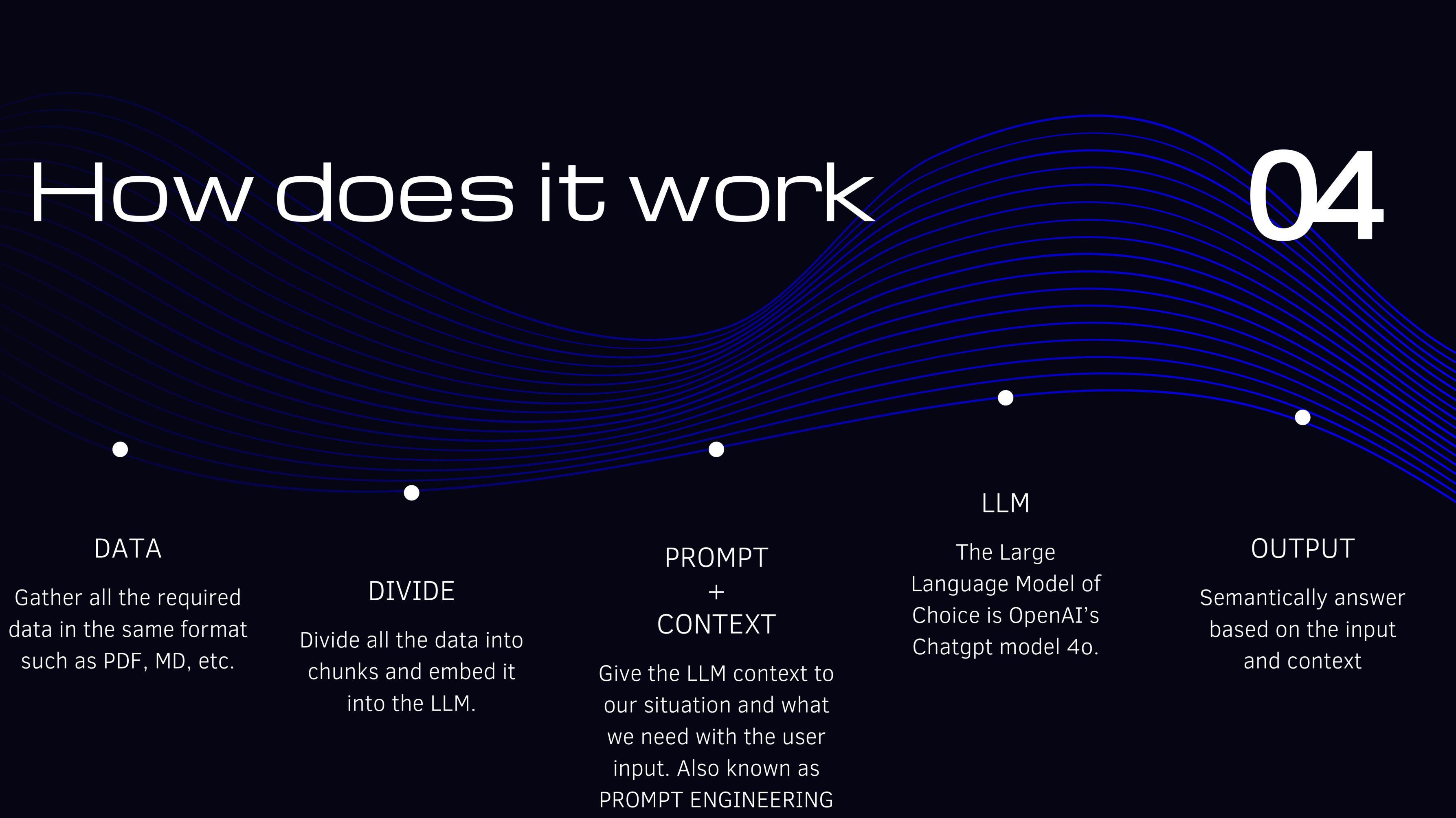
- Semantic Response
- Efficient
- Scalability

Disadvantages:

- Data Source Management
- Complexity

How does it work

04



05

Specific Requirements:
Associated sensor(s)
Sensor measuring point(s)
Sensor description
Sensor measuring range
Related system(s)
Dependent system(s)
Related sensors
Potential Triggers: Identify possible causes of the alarm
Temperature, pressure, or power exceeding threshold set
Engine shutdown
Sensor failure
Crew Member Guidance: Provide recommended actions for
Based on this context:
Note:
Start the cleaning operation only when the engine has
engine components must not come into contact with cold
venting pipes before refilling the cooling water system
prevent air from escaping which can lead to thermal ov

prevent air from escaping which can lead to thermal ov
engine.
Note:
The products to be used can endanger health and may be
environment. Follow the manufacturer's handling instru

output for a limited period. However, a more effective
pressure ratio and operational adjustment of the injec
tion characteristics of the fuel used, as is the case
piston engines.

temp
0-120 °C engine Control Modules -
45 1PT4170 pressure transmitter,
LT water pressure
charge air cooler inlet
alarm at
low cooling
water pres-
sure
0-6 bar engine Control Module/
Alarm
-

40 1TE3170-1/2 double temp sensor,
HTCW temp engine
inlet
alarm, indi-
cation

0-120 °C engine Control Modules -
41 1TE3180-1/2 temp sensor, HT
water temp engine
outlet
- 0-120 °C engine Control Modules -

charge air
blow off
Main bearings
19 xTE1064-1/2 double temp sensors,
main bearings
indication

2. Verify the Alarm
- **Check the sensor readings**: Confirm the high temperature
- **Inspect the sensor**: Ensure the sensor is functioning co

3. Investigate Potential Causes
- **Temperature Exceeding Threshold**: Verify if the temperat
- **Cooling System Issues**: Check for any issues in the cool
 - **Low cooling water pressure**: Refer to sensor **1PT4170
 - **Blocked or restricted cooling water flow**: Inspect for
- **Lubrication Issues**: For lube oil temperature alarms, ch
- **Charge Air System**: For charge air temperature alarms, i
- **Fuel System**: For fuel temperature alarms, check the fue

4. Immediate Actions
- **Reduce Engine Load**: If safe to do so, reduce the engine
- **Increase Cooling**: If possible, increase the cooling wat
- **Check for Leaks**: Inspect for any leaks in the cooling o

5. Long-term Solutions
- **Maintenance**: Schedule maintenance to inspect and repair
- **Sensor Calibration**: Ensure all temperature sensors are c
- **System Upgrades**: Consider upgrading components if recur

6. Documentation and Reporting
- **Log the Incident**: Document the alarm, actions taken, an
- **Report to Supervisor**: Inform the relevant personnel or s

Example Scenario
If the high temperature alarm is triggered by sensor **1TE2170-1/2**
1. **Verify the high temperature reading** on the control mod
2. **Inspect the lube oil system** for proper oil flow and lev
3. **Check for any blockages or restrictions** in the oil line
4. **Reduce engine load** if necessary to lower the temperatu
5. **Document the incident** and report to the supervisor.

By following these steps, you can systematically address and resolve the issue.

Sources: ['data\\Manual\\ManualMD.md', 'data\\Manual\\ManualM...']

TESTING

The accuracy of output and credibility of the sources are most important criteria for the assessment of the result

06

Demonstration

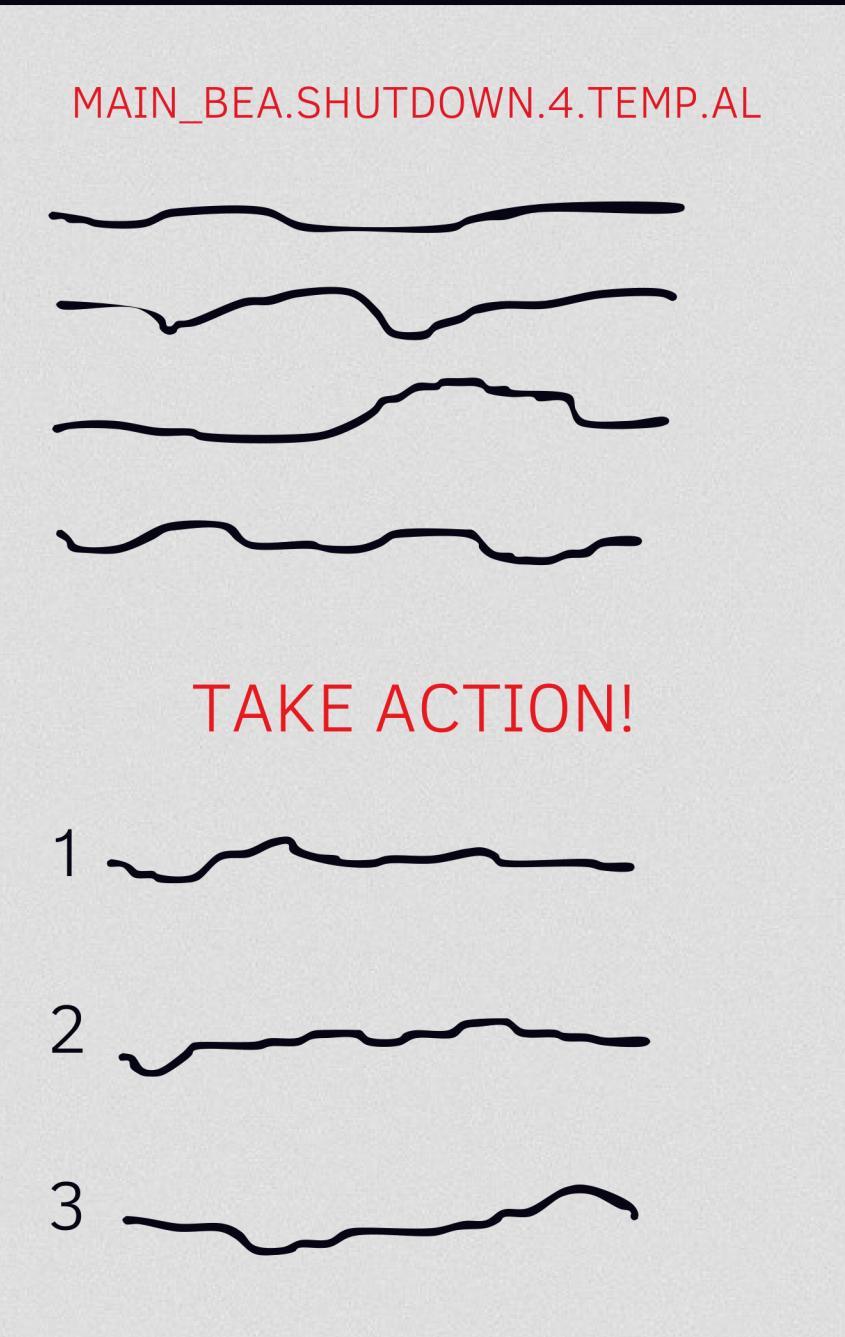
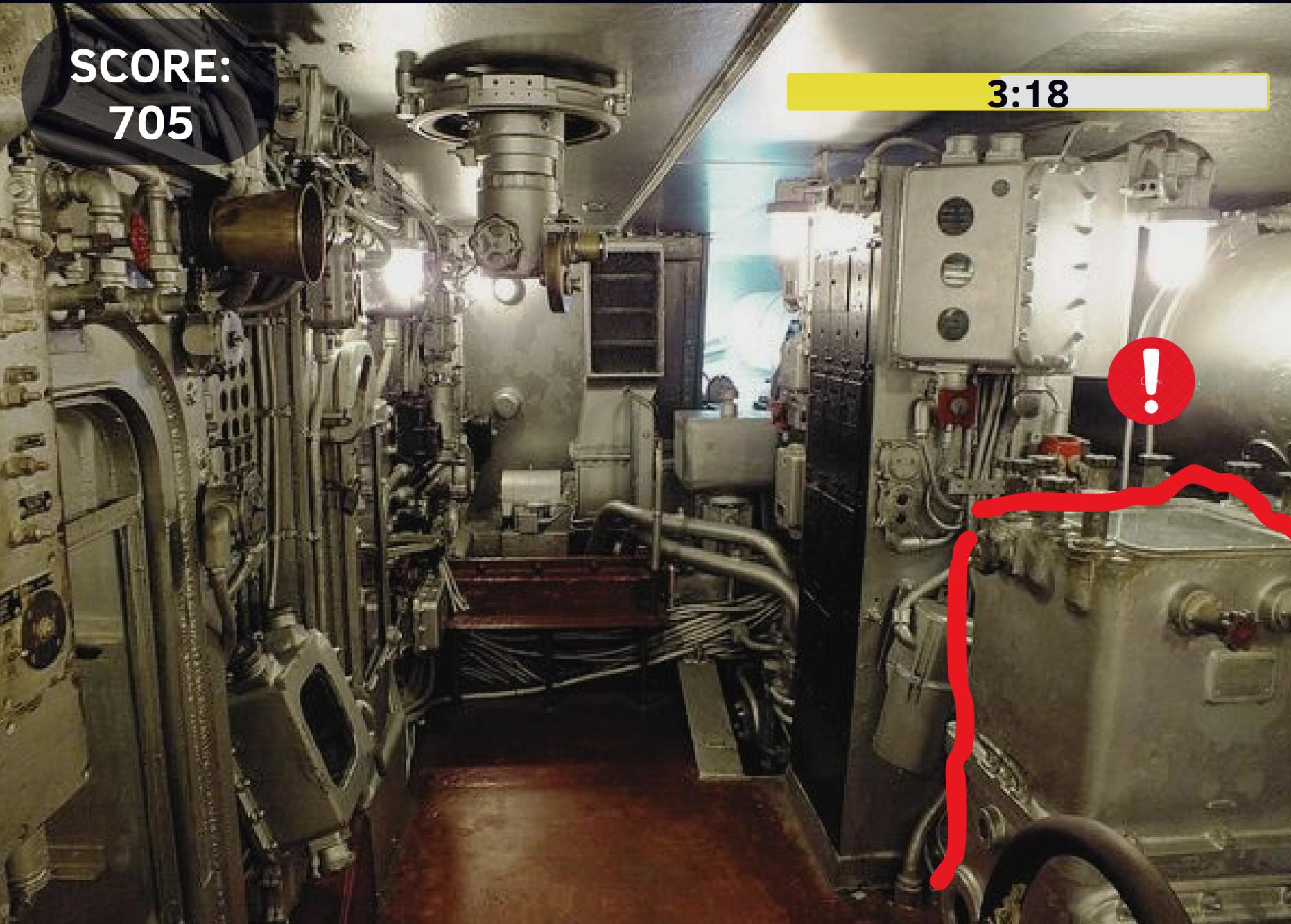
A demonstration of a prototype

Enter the Alarm:

Execute

07

UTS-Hackathon



GAMIFICATION

08

FUTURE DIRECTIONS

LLM

- Change to latest fastest LLM, Groq. it's 10x faster than Google's Gemini and 14x faster than OpenAI's Gpt

PROMPT CATCHING

- Preprompt all the alarms
- Save it to a local file
- Check with user input if its already exist
- If yes, push the saved response
- if no, prompt it normally

PROMPT ENGINEERING

- Further improve the context as training goes. Test out what works with user feedback.

NOISE REDUCTION

- Remove Irrelevant Data

09

Thank
you for the
attention

:)