Input

System Specification

If air_ok signal is low, auto_control_mode is terminated within 3 sec.

Legal Text

Where there are two vehicle lanes in the same direction, the minimum speed for the left lane is 100 kilometers per hour.

Business Process Description

The process starts with the cutomer asking for a bike repair within one week.

NL2MTL Prompt

Objective: Translate given text into Metric Temporal Logic (MTL).

Background: Metric Temporal Logic (MTL) is a formalization tool that incorporates time-bound statements using atomic propositions, Boolean operators, and temporal operators. Key temporal operators include G (globally), X (next), F (eventually), O (once), and S (since), which can be used with specific time intervals [lb, ub]. Additionally, Boolean operators ¬ (not), ∧ (and), ∨ (or), and the implication operator a ==⇒ b (defined as ¬a ∨ b) are essential components.

Translation Text to be Formalized: [TEXT_HERE]

Translation Process:
1. Decompose the provided text into individual atomic propositions.
2. Identify temporal relationships within the statement.
3. Construct MTL expressions using the appropriate temporal and Boolean operators, as outlined above.

Expected Output: A JSON file representing MTL translation.

JSON Structure: A collection of MTL formulas with atomic propositions, their interdependencies, and non-formalized text elements.

Instruction: Generate the JSON file methodically, ensuring each MTL_expression is included without omission.

Output

Context: Automated Medical Support System

MTL Formula: G (prop1 ==⇒ F[0, 3] prop2)

Propositions: [

{ **ID:** prop1,
Description: Air_ok signal is low,
Granularity: Seconds,
Ambiguities: Not Detected,
Assumptions: Not Detected} ,

{ **ID:** prop2,
Description: auto_control_mode is terminated,
Granularity: Seconds,
Ambiguities: Not Detected,
Assumptions: Not Detected}]

MTL Formula Dependencies

Non Formalized Text