Tyrata Simulator
User Manual

TYRATA

Author: Zike Qin   Yinsi Zhang   Zhizhou Zhang   Yifan Li   Haohong Zhao

Contents

1. System Overview

This desktop program serves as the data simulator & generator for Tyrata system. Specifically, the simulator & generator program consists of the following components:

1.1. Tire sensor information initialization & modification

1.2. Data generation & simulation configuration

1.3. Data file save & import

1.4. Data Transmission via Bluetooth

2. Getting Started

System Requirements

Windows 10 PC (with Bluetooth support)

Launching the Application

To launch the application, double click .exe. The main user interface of the launched application is shown in Figure.4
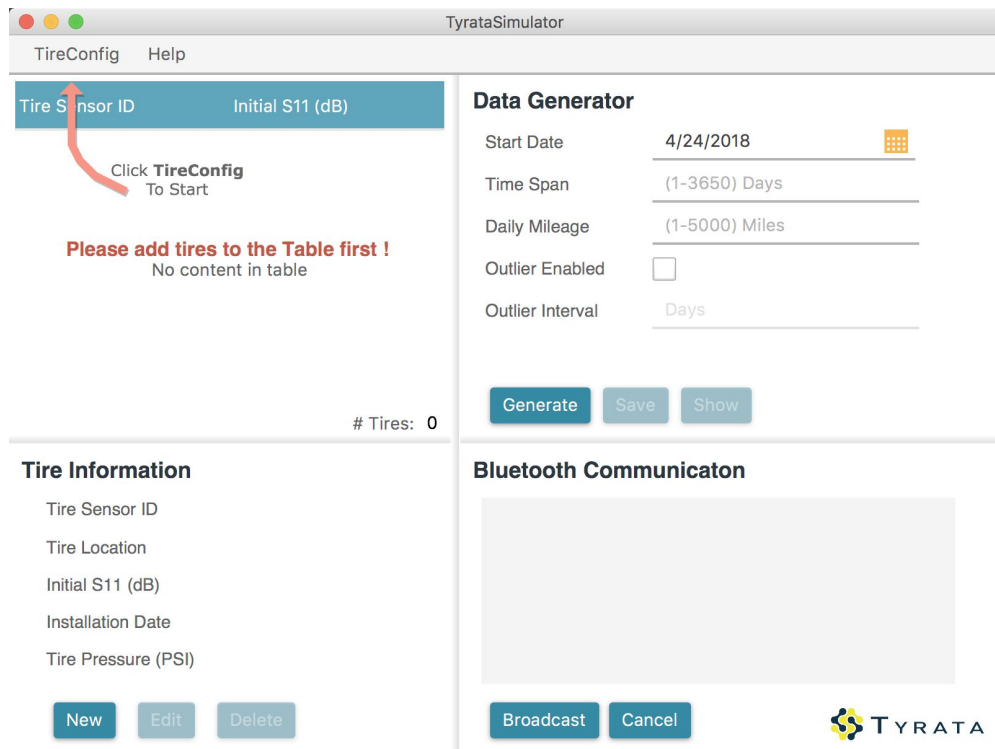
Figure. 4. Main interface

Initializing Tire Sensor Information

To generate tire sensor information,
1. Click "Tire Config" on Menu bar and then click "Generate Tires", as shown in Figure.5.
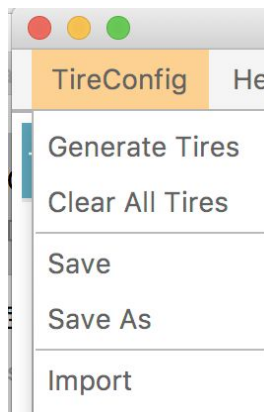2. Enter the number of tire sensors and click "OK", as shown in Figure.6.
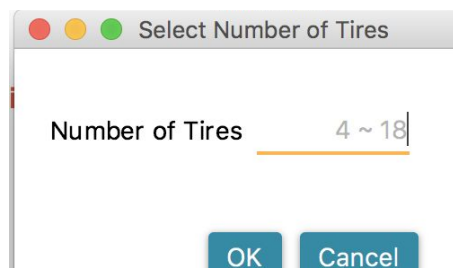

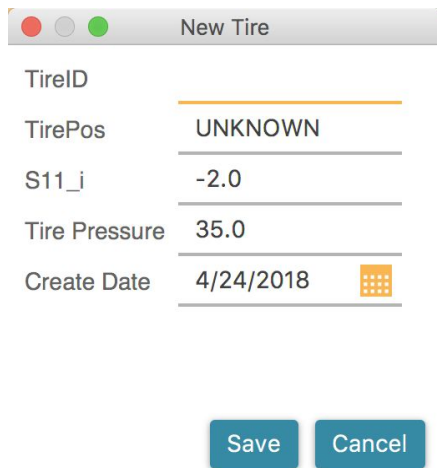Figure.5. TireConfig menu   Figure.6. Enter the number of tires

After quick generation of tire sensor information, you can view the current generated tire sensor information on the lower left section of the main user interface shown in Figure.4.

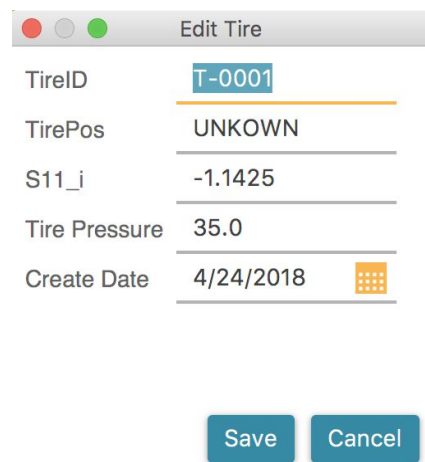To add a new tire sensor, delete a generated tire sensor, or edit the information about a tire sensor,

- Click "New" button to add a new tire sensor. Enter the specific sensor information in the new "New Tire" window popped up, as shown in Figure.7.
- Click "Edit" button to modify the information about a current tire sensor in the "Edit Tire" window popped up, as shown in Figure.8.
- Click "Delete" button to delete the selected tire sensor information record.

Figure. 7. New Tire   Figure. 8. Edit Tire

To clear all tire sensor information records, click "TireConfig" button on the menu bar and select "Clear All Tires", as shown in Figure. 5.

Saving/Importing Tire Sensor Information

To save the current tire sensor information records for later use,

- Click "Tire Config" on menu bar and then click "Save" or "Save As", as shown in Figure. 5.

To import a local tire sensor information XML file,

- Click "Tire Config" on menu bar and then click "Import", as shown in Figure. 5.

Generating S11 Data

To generate s11 data points,

- Fill out all the fields on the upper right section of the main user interface, as shown in Figure.9. The units of Time Span, Daily Mileage, and Outlier Interval are days, miles, and days, respectively.
- If needed, check the "Outlier Enable" checkbox and enter the expected outlier generation frequency/period in "Outlier Interval" field.
- Click "Generate" button to generate specified S11 data.
- Click "Show" button to show the generated S11 data, as shown in Figure. 10.
- Click "Save" button to save the generated S11 data into a local XML file.

Figure. 9. Data Generator   Figure. 10. Show Generated Data

Sending the Generated Data to Mobile App via Bluetooth