Instruction Manual For Robotic Control Algorithm

Overview

This program simulates a robotic algorithm for controlling a two-wheeled differential drive robot in a grid-based environment. The robot is capable of moving forward, backward, turning left, and turning right within a predefined grid.

Features

- Allows users to input commands via a user interface (UI) to control the robot's movements.
- Displays the final position of the robot after executing the commands.
- Provides a visual representation of the robot's movements within the grid.

Prerequisites

- Python 3.6 or above

Installation

1. Clone the repository to your local machine:

   git clone https://github.com/Virgo-Alpha/Robotic_Control_Algorithm

2. Navigate to the project directory:

   cd Robotic_Control_Algorithm

3. Activate the venv:

   source venv/bin/activate

4. Install the required dependencies:

   pip install -r requirements.txt

Usage

Using the Tkinter UI (for Tinker version)

1. Run the program using Python:

python robot_ui.py &

2. The Tkinter UI window will open, allowing you to input the initial position of the robot (x, y) and its orientation (N, E, S, W).
3. Use the buttons to enter movement commands (F for forward, B for backward, L for turn left, R for turn right) or manually type the commands in the Commands field.
4. Press Enter or click the movement buttons to execute the commands.
5. The final position of the robot will be displayed, along with a visual representation of its movements within the grid.

Testing

I have implemented unit tests using pytest in the tests folder

Running unit tests
2. Navigate to the tests directory:

cd tests/

3. Run the command:

pytest

- Sometimes the command above does not work unless you either delete the __pycache__ folder or specify the python files:

pytest *.py