Option 1: Setup and Running With the Bash Script

1. **Create a requirements.txt file** listing all dependencies:
    a. matplotlib
    b. numpy
    c. pyserial
2. **Run `run_app.sh` Script**: The included `run_app.sh` script will automatically create a virtual environment, install dependencies, and run `app.py`. To execute it:
    a. `chmod +x run_app.sh`
    b. `./run_app.sh`

This script will:

- Check if a virtual environment named myvenv exists.
- Create myvenv if it doesn't exist and activate it.
- Install all dependencies from requirements.txt.
- Run app.py.

Option 2: Manual Setup and Running Without the Bash Script

1. **Create a Virtual Environment**:
    - python3 -m venv myvenv
2. **Activate the Virtual Environment**:
    - source myvenv/bin/activate
3. **Install Dependencies**: Ensure you have a requirements.txt file with all necessary libraries listed:
    - matplotlib
    - numpy
    - pyserial

    Then install dependencies:
    - pip install -r requirements.txt
4. **Run app.py**: Once dependencies are installed, you can run the application:
    - python navigation.py

Setting Up the run_app.sh Bash Script

1. **Create the run_app.sh Script File**:

    In your project directory, create a new file named run_app.sh:
    - touch run_app.sh
2. **Edit the Script File**:

    Open run_app.sh in a text editor and paste the following code:

- Code:

```
#!/bin/bash
# Step 1: Check if the virtual environment "myvenv" exists
if [ ! -d "myvenv" ]; then
    echo "Virtual environment 'myvenv' does not exist. Creating it now..."
    # Step 2: Create a virtual environment named "myvenv"
    python3 -m venv myvenv
    echo "Virtual environment 'myvenv' created successfully."
else
    echo "Virtual environment 'myvenv' already exists."
fi
# Step 3: Activate the virtual environment
source myvenv/bin/activate
echo "Activated the virtual environment 'myvenv'."
# Step 4: Install required packages from requirements.txt
if [ -f "requirements.txt" ]; then
    echo "Installing packages from requirements.txt..."
    pip install -r requirements.txt
    echo "Packages installed successfully."
else
    echo "Error: requirements.txt file not found."
    exit 1
fi
# Step 5: Run navigation.py
if [ -f "navigation.py" ]; then
    echo "Running navigation.py..."
    python navigation.py
else
    echo "Error: navigation.py file not found."
    exit 1
fi
```

2. **Make the Script Executable**:

   Run the following command to give execute permissions to the script:

   - chmod +x run_app.sh
3. **Run the run_app.sh Script**:

   Execute the script to set up the environment, install dependencies, and run app.py:

   - ./run_app.sh