LoRaSIM simulator installation instructions

LoRaSim is a discrete-event simulator developed with SimPy, designed to simulate LoRa network collisions and analyze scalability. To get started with LoRaSim and learn how to use it, follow these installation steps:

1. **Install Python**: Ensure you have Python installed on your system.
2. **Install Dependencies**: Once Python is installed, use the `pip` command to install the required dependencies, listed in the `requirements.txt` file. These dependencies include essential libraries such as NumPy, SimPy, and Matplotlib.
3. **Download LoRaSim**: Clone the LoRaSim repository from the following GitHub link: https://github.com/ghassanhelouUSJ/LoRaSIM-Extension.git
4. **Navigate to the Simulation Files**: After cloning the repository, move to the folder where the simulation files are located.
5. **Run the Simulation**: Execute the `loraDir.py` Python script (single gateway), from the command line, providing the required parameters such as the number of nodes, average send time, simulation time, and others. Here's an example of how to run the script:

   ./loraDir.py <nodes> <avgsend> <experiment> <simtime> [collision]

   Explanation of Parameters:

   nodes: The number of end devices (EDs) to simulate.

   avgsend: The average send time $T = \frac{1}{\lambda}$ with data rate λ.

   simtime: The total simulation time in milliseconds.

   collision: A Boolean flag (0 or 1) indicating whether to account for the Capture Effect (CE) (1) or use a basic Aloha access scheme (0).

   experiment: An integer specifying the radio settings for the simulation, with different values representing different configurations:

   - {0} use the settings with the slowest data rate (SF12, BW125, CR4/8).
   - {1} similar to experiment 0, but use a random choice of 3 transmit frequencies.
   - {2} use the settings with the fastest data rate (SF6, BW500, CR4/5).
   - {3} optimize the setting per node based on the distance to the gateway.
   - {4} use the settings as defined in LoRaWAN (SF12, BW125, CR4/5).
   - {5} similar to experiment 3, but also optimizes the transmit power.