PROJECTPROPOSAL

1. Project Title: -Vehicle routing in grid road networks

2. Project Scope:

1) The first step is to define the problem clearly which includes identifying the type of vehicles, the size of the vehicles, the space where they will operate and the criteria for collision avoidance.

2) The next step would be to collect data on the vehicles and the space where they will operate.this involves obtaining information on the dimensions of the vehicles, number of vehicles available, and the size of the operating space, and any obstacles or other factors that could affect collision avoidance.

3) Now once the data is collected, a mathematical model can be developed to simulate the movement of the vehicles and predict the livelihood of the collision. The model would take into account factors such as speed and direction of the vehicles, distance between them and any other obstacle in the operating space.

4) After developing the model, it would be tested to determine its accuracy and reliability. This would involve inputting data on various scenarios and comparing the models prediction to its actual outcomes.

5) While using the model, the optimal number of vehicles that can be deployed without collision can be determined. This process would involve testing different scenarios and adjusting the number of vehicles until the model predicts no collision.

6) Once the number of optimal vehicles is determined, the solution can be implemented. This could involve adjusting the number of vehicles deployed, reconfiguring the operating space, or just modify the vehicles themselves to improve collision avoidance.

7) Finally, the system should be monitored and updated over time to ensure that it continues to operate effectively and efficiently. This could involve collecting additional data, refining the model or just adjusting the number of vehicles based on changes in the operating environment.

3. Requirements: -

➢ <u>Hardware Requirements:</u>

- A computer with a powerful CPU and sufficient RAM to run simulations smoothly and quickly.
- A graphic card capable of rendering 3D graphics for visualization of the simulation results.
- Input devices such as a keyboard, mouse, and possibly a joystick or gamepad for controlling the simulation.

➢ <u>Software Requirements:</u>

- Simulation software such as MATLAB Simulink, AnyLogic, or ROS (Robot Operating System).
- Programming languages such as Python or C++ for writing scripts or modules to run the simulation.
- Libraries for collision detection and avoidance algorithms, such as OpenCV or Bullet Physics Engine.
- Data visualization software such as Tableau or matplotlib for creating graphs and charts to display simulation results.

STUDENTS DETAILS

Name	UID	Signature
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APPROVAL AND AUTHORITY TO PROCEED.

We approve the project as described above, and authorize the team to proceed.

Name	Title	Signature (With Date)