Artificial Intelligence Course - First Assignment Report

Project Title: Vacuum World

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This project is based on the Vacuum Cleaner World example from the AI course textbook. The objective was to simulate an environment resembling a simplified version of a vacuum cleaner world. This environment consists of an L-shaped room, where a vacuum cleaner robot performs specific actions in response to its surroundings.

Our task was to implement different types of environments, each with unique parameters that influenced the robot's actions and sensor accuracy.

Implementation Details

Our implementation consists of three primary files:

1. **Environments** - Encodes all 18 possible environment combinations.
2. **Agents** - Implements the 18 agents behaviors corresponding to each environment.
3. **Test** - Runs tests to evaluate agents performance across all 18 scenarios.

Evaluation Metrics

The following metrics were used to assess agent performance in each environment:

- **f1**: Total number of agent moves.
- **f2**: Total number of failed moves (e.g., moving into a wall).
- **f3**: Total number of suction commands issued.
- **f4**: Number of successful suction commands.
- **f5**: Number of dirty rooms at the end of each step.

Conclusion

By testing all combinations, we gained insights into agent adaptability across varying environmental complexities.