AI & Robotics Project Proposal

Project Title: Recommendation System with Deep Reinforcement Learning

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Project Category/Topic:

- AI or Robotics

Project Aim:

- The goal is to explore the application of deep reinforcement learning on recommendation systems.
- Significance: It expands the application of reinforcement learning algorithms to commercial scenarios.
- Relevance: reinforcement learning, deep neural network, recommendation.

Related work:

1. Playing Atari with Deep Reinforcement Learning, Mnih et al, 2013.
2. Prioritised Experience Replay, Schaul et al, 2015.
3. Deterministic Policy Gradient Algorithms, Silver et al, 2014.
4. Continuous Control with Deep Reinforcement Learning, Lillicrap et al, 2015.
5. Policy Gradient Methods for Reinforcement Learning with Function Approximation, Sutton et al, 2000.

Project Objectives/Deliverables:

1. Present sufficient knowledge on the basic theory and methods of RL.
2. Frame the problem as a solvable RL problem.
3. Implement the algorithms and solve the problem.

Methodology:

- Research and testing.

Project Plan:

- Feasibility: The project requires basic knowledge of deep reinforcement learning.
- Resources: N/A.
- Proposal week 1 - First Draft week 6 - Presentation week 10 - Final week 12.

Risks and Contingency Plan:

- Failure of the code implementation could prevent reaching the project objectives.
- The formulation of problem model is particularly difficult aspect of the project.
- The contingency plan is to replace the environment with a built library.

Hardware/Software Resources:

- Provided by the supervisor.

Data:

- Provided by the supervisor.