A silhouette of a person's head and cityscape

AI-generated content may be incorrect.

**Societal Impact Analysis:  
AI Agent for Car Racing Game**

Version: 2.0  
Author: José Henrique Nóbrega Pereira  
Fontys ICT  
Date: May 29, 2025

|  |
| --- |
| A black background with purple text  AI-generated content may be incorrect. |

The primary goal of this project is to create an AI agent capable of playing the Car Racing game present in the gymnasium library using reinforcement learning. The main goal is to allow people who play the videogame to look at the AI play and learn new strategies and techniques from it. The idea is to offer an interesting and insightful experience for players who are curious about the AI approach to a videogame. While this is the main goal of the project, it also has the added benefit of making AI more approachable since observing how the agent learns and improves over time can spark curiosity and provide learning opportunities for the people interested. In group settings, like students experimenting together, it can even promote collaboration and discussion between them.

This project is particularly interesting for videogame players who want to learn from watching an AI play and pick up on new strategies and insights on how they can improve their own way of playing and maybe reflect on things they had not even considered yet. While that is the main goal, it can also be used in an educational setting, where abstract AI concepts can be tricky to grasp. Having this tool could help students to visualize machine learning and other important concepts. In addition, online communities might find value in sharing models, training setups, behaviour patterns and the post-training data.

Transparency is a key part of the project design. The training process, reward system and agent behaviours are made visible and well-documented. Anyone who is interested can access training logs and statistics to understand how the AI behaves and was developed. This leads to deeper learning for those who want to explore the topic further and fully understand the agent.

From an environmental point of view, it is worth noting that reinforcement learning is usually by nature a resource intensive process due to the high number of training episodes required. However, this project uses a relatively light environment, keeping energy costs as low as possible. To reduce future need for extensive training, the already trained models are shared so they can be reused. These small steps combined work together to reduce the environmental impact as much as possible.

Regarding ethical concerns, this project carries minimal risks. It is constrained to the virtual environment that it is trained in with no connection to real world systems, reducing the chance of misuse. While someone could adapt it for cheating in other games or try to apply it to real autonomous driving, the AI is too basic for those purposes and not trained on real world data. Any attempt to adapt it would require much more extensive training.

On the data side, the AI only interacts with the game internal state. It does not process any personal data or use external datasets. This avoids any privacy issues and keeps the project safe from bias that might exist in real world data. Still, the reward structure during training can have unintended consequences on the AI behaviour. If it is rewarded too heavily for finishing quickly, it might start cutting corners and skipping parts of the track. This shows how a simple change can greatly change the AI agent we end up after training.

In terms of inclusivity, the system is open to anyone with a decent computer. However, that requirement can still be a barrier for people without access to such hardware. While this is something that is not caused directly by the project, it is an important factor to take into account when thinking about who gets to participate and use it.

Looking into the future, the project can help spark even more curiosity around the AI topic through education and hands-on experience. Watching the agent race and learning from it is a great way to get people thinking how AI works behind the scenes. It could also lead to the creation of online communities where people interact with each other and share tips and tricks. At the same time, there is a risk that players might rely on the AI too much for strategies and how to play and stop developing their own. That is a risk that needs to be kept in mind when doing projects of this nature.

Overall, this Car Racing AI seems like a way of people learning from AI and getting together exploring it, opening deeper opportunities for players and hobbyists to engage with AI, making it more understandable and accessible to a wider audience. At the same time it is important to consider the downsides, like energy use and the risk of users over relying on it. Balancing these aspects is important to using these tools responsibly and meaningfully.