

Self
Drive

Mario Kart

Search Use item Sequence

Use Search AI to replace imitation learning, saving human efforts.

Remap N64 joystick return byte as steering probabilities, with drift action together to form 21 pairs of actions. And we reduce to 15 actions.

Record Search Root image and action with best reward.

Include three parts:

1. Item Detection with Tree model
2. Kart Detection with Yolo
3. AI strategy to use different items

The sequential input with 3 prior screenshots to capture features over time

The output with previous influence.

Introduction

- Many research efforts exist in developing autonomous vehicles.
- Mario Kart 64 represents a simplification of real-life autonomous driving, yet introduces interesting challenges, such as hazards, jumps, and items.
- We developed a real-time Mario Kart 64 autopilot which trains and plays without human intervention by the BizHawk emulator

Problem Statement

How to improve the simplified model with Drift, Use items and Sequence?



Achievements & Conclusion

We develop a self-driving Mario Kart AI with **Sequential Input, Drifting and Using Items**.

The methods include

- Search AI,
- Autopilot Model with Sequential Input, Steering & Drift Control,
- DT and Yolo for items using.

Possible improvement in the future:

- When stuck on walls, the AI don't know which direction to go.
- The stability of the merged system
- RL that reward better performance and punish error condition.
- The strategy of using some items.

Deep learning for NLP and CV

2018.12.11

Team

Chen, Junyi

Du, Haikun

Zeng, Jianhuan

