

## Task Overview

- Our task is to deploy an end-to-end automatic driving system on a real car, including perception, model inference and control submodules.



Figure 1 – Our Automatic Driving Car

## RL Algorithm

- We train our model in a simulator powered by ml-agents.



Figure 4 – Simulator

## CAN Interface

## Experiment Results

## Conclusion

## Reference

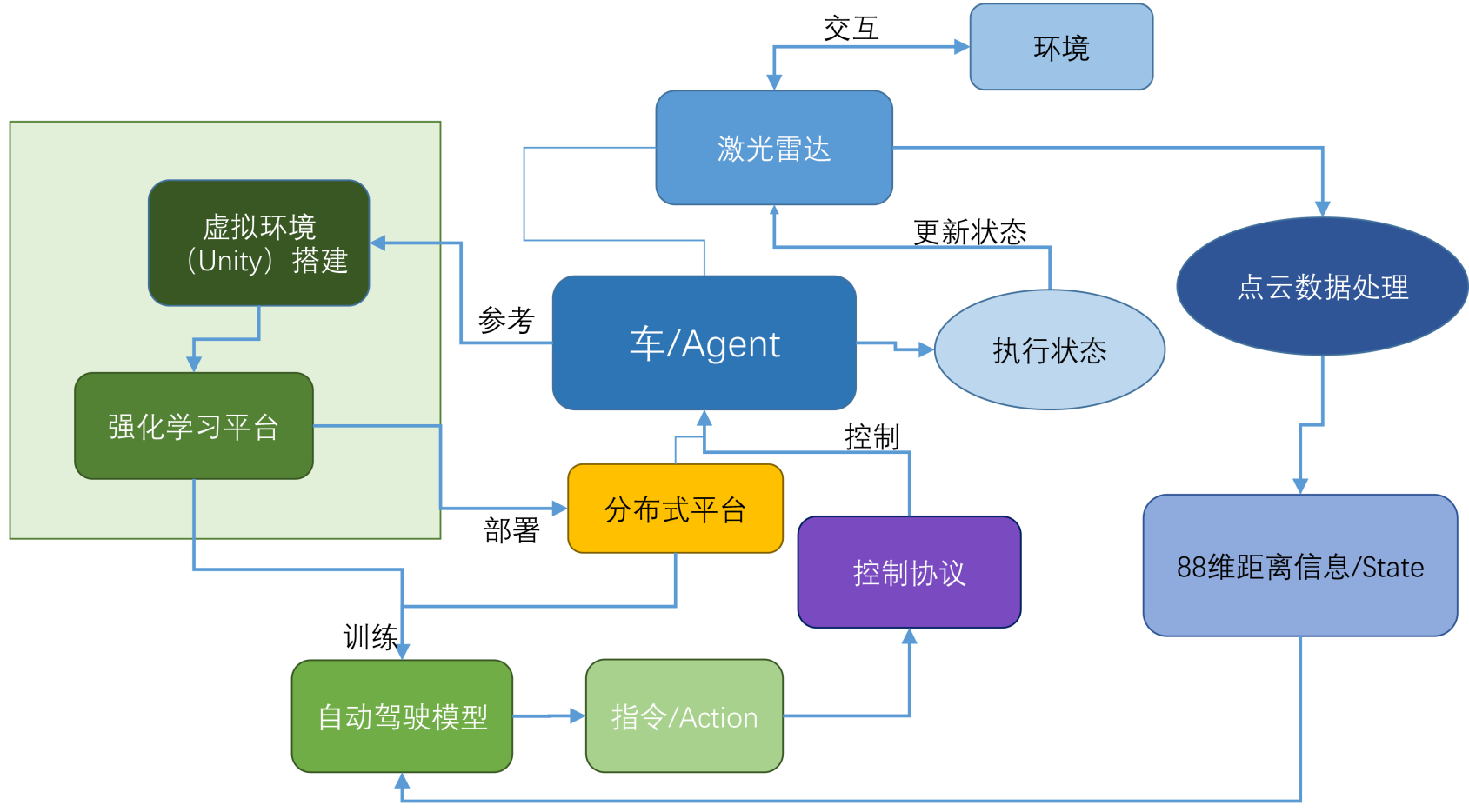


Figure 2 – Our System Architecture

## Contribution

- Design a reinforcement learning algorithm with PPO.
- Design a LIDAR perception data fusion algorithm.
- Model integration & interface deployment.

## Approach

### Training Environment

- We employ 8 high performance machines, each with 2 NVidia 2080Ti GPU.
- Ray & RLlib: We use scalable and distributed reinforcement learning lib to accelerate training process.



Figure 3 – Ray Lib

## LIDAR Algorithm

- There is a blind area near the LIDAR.
- With 3 LIDAR, we design a data fusion and context perception algorithm to shrink blind area.