Autonomous Car Parking
CS7IS2 Project (2021/2022)

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Abstract. Motivation behind the work, high level description of the problem, how it was solved by the proposed algorithms.

Keywords: Soft-Actor-Critic (SAC), Behaviour Cloning, Evolutionary Algorithm, parking

1 Introduction

The Autonomous Vehicle (AV) industry is one of the most active and promising area in the recent years with many ongoing research to make it fully autonomous [6]. The International Society of Automotive Engineers (SAE) proposed a six-degree autonomy scale with level 0 as no automation and level 5 as full automation without any human interventions [5]. The current level of autonomy scale achieved today is between level 2 and 3 requiring some assistance from the driver and limited to ideal conditions. Car parking is challenging and disliked by most drivers due to time required searching for spaces, risk of scratching vehicle, safety of pedestrian, etc [1][3]. Most vehicles are parked 95% throughout the lifetime [2]. Parking is required by every driver and apply AV will greatly improve the quality of life and ease of drivers.

The highway-env github repository[1] contains a collection of autonomous driving and tactical decision-making tasks environment [4]. The parking environment[2] is the selected for the project which is a goal-conditioned continuous control task in a given space with a vehicle aiming to reach the destination point.

2 Related Work

Related work

3 Problem Definition and Algorithm

Problem definition and algorithm

[1] https://github.com/eleurent/highway-env
[2] id of "parking-v0"

4 Experimental Results

Experimental result

5 Conclusions

Conclusion

References

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