

Can adversarial imitation reinforcement learning reduce battery capacity loss and energy loss?

Conclusion An adversarial imitation reinforcement learning-based energy management strategy for lithium-ion battery/supercapacitor electric vehicles is proposed in this paper to minimize the battery capacity loss and energy loss cost.

Does imitation reinforcement learning increase training speed?

During the training process, the proposed imitation reinforcement learning method can increase the training speed by 42.60% while increasing the reward by 15.79% compared to traditional reinforcement learning.

How does a dynamic imitation weight affect a self-exploring Agent?

Due to the effect of dynamic imitation weight, the imitation learning weight decreases fast from then on, and the agent starts to self-explore instead of still being guided by the expert. Note that the expert knowledge is from CLTC, rather than the training driving cycle.

What is dynamic imitation weight?

Dynamic imitation weight is utilized to gradually transition from the early imitation stage to the late self-exploration stage, which improves the convergence rate and optimization performance of the agent and fully inspires the potential of the expert knowledge, avoiding the problem of training oscillation.

Can dynamic imitation weight solve the "cold-start" problem?

Clearly, whether with or without the dynamic imitation weight, the proposed method can effectively solve the "cold-start" problem of the training process. The initial average rewards are all around -1200, while the initial average rewards of DDPG are around -1700. Fig. 6.

In the realm of energy storage solutions, capacitor batteries play a pivotal role due to their unique architecture and operational principles. Unlike traditional batteries, which ...

Here's the shocker - fuse boxes don't store electricity any more than a traffic cop stores cars. They're the ultimate circuit bodyguards, not energy hoarders [1] [3].

The race to store electrons has never been this intense! Whether you're a homeowner eyeing energy independence or a tech enthusiast tracking innovation, one thing's clear: equipment ...

How can a new technology improve energy storage capabilities? New materials and compounds are being explored for sodium ion, potassium ion, and magnesium ion batteries, to increase ...

The ever-changing energy involved in each lightning bolt. Lightning is sporadic, therefore energy would have to be collected and stored. Difficult to convert high-voltage electrical power to the ...

By connecting a big battery with another power source, such as a wind turbine or solar farm, big batteries can store renewable energy and only release it when it's needed most. So when the ...

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Let's address the elephant in the room first - no, your empty fridge isn't secretly moonlighting as a Tesla Powerwall. But here's the twist: while refrigerators can't store electricity like batteries, ...

To effectively store electricity, various substances can be utilized, including 1. Batteries, which use chemical processes to convert chemical energy into electrical energy, ...

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