

# Review of: "Enhancing EV Charging Station Reliability and RAS Safety"

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**Potential competing interests:** No potential competing interests to declare.

Thank you, Dr. Chandru, for sharing the paper "Evaluating Reliability and Economics of EV Charging Configurations and Deep Reinforcement Learning in Robotics and Autonomy." This paper raises a very innovative topic: using Deep reinforcement learning in the EV and EV charger station to analyze cost, location use, or whether to update the equipment to reduce the overall cost.

For this paper, there are still some Pros and Cons:

## **Pros:**

1. Deep reinforcement learning can improve the reliability and economics of EV Charging Stations.
2. Deep reinforcement learning can enhance safety in robotics and autonomous Systems (RAS).
3. By integrating formal neural network analysis and safety verification methods, the study provides a robust methodology for evaluating the safety and reliability of Deep reinforcement learning algorithms and EV charging infrastructure.
4. The reliability assessment framework can be generalized to other applications where deep reinforcement learning and EV technologies are deployed, enhancing overall system resilience.

## **Cons:**

1. Implementing the proposed dual-port (uniform and non-uniform) configurations in EV charging stations is complex and requires careful consideration of installation space, investment, and maintenance requirements.
2. The framework for evaluating Deep reinforcement learning safety involves sophisticated verification tools that may be computationally intensive and challenging to apply across diverse scenarios and environments.
3. Despite the proposed verification framework, Deep reinforcement learning algorithms still face significant challenges in real-world, safety-critical contexts due to their inherent unpredictability and the stochastic nature of their environments.
4. The economic viability of the proposed charging configurations depends on numerous factors, including EV growth rates, charging demand patterns, and the cost of port installation and maintenance, which may vary widely across regions.

**Concluding Remarks:** I would recommend the paper for journal publication in its present form. The paper presents valuable insights into enhancing the reliability and safety of EV charging infrastructures and deep reinforcement learning systems; it also highlights the need for further research and development to overcome the practical

and theoretical limitations associated with these technologies.