Dear Editors,

I would like to request you to consider the attached manuscript entitled “Coordination as Inference in Multi-Agent Reinforcement Learning” for publication in Neural Networks.

While previous studies usually adopt the paradigm of Centralized Training and Decentralized Execution (CTDE) to learn coordinated behavior in Multi-Agent Reinforcement Learning (MARL) domain, they may fail due to the issue of Centralized-Decentralized Mismatch (CDM). In contrast to centralized learning, the cooperative model that most closely resembles the way humans cooperate in nature is fully decentralized, where the agents’ policies are optimized independently, i.e. Independent Learning (IL). However, the major challenge is how to utilize IL to coordinate agents. In light of Theory of Mind, we design our framework by utilizing interpersonal action coordination pattern. Results clearly demonstrate that independent learning can achieve coordinated behavior even in complex tasks without the CTDE paradigm, as well as without explicit communication or shared actions/observations. I feel that this work will provide momentum for narrowing the gap between independent learning and centralized learning.

­­­­­I believe that the findings of this study are relevant to the scope of your journal and will be of interest to its readership.

This manuscript has not been published or presented elsewhere in part or in entirety, and is not under consideration by another journal**.** There are no conflicts of interest to declare.

I look forward to hearing from you.

Sincerely,

Zhiyuan Li