Multi-task learning control system by compound function with application in goal and obstacle consideration

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ABSTRACT

Multi-tasking in actions help humans produce actions that satisfy the need of multiple purposes. Even though humans may apply multi-tasking when producing actions, a control device mainly produces a control action that can only satisfies a single task. In this research, a method of Learning Control that utilizes compound function in developing and applying multiple control knowledge (state-action rule) of tasks is proposed. Decision management for considering either tasks is conducted by compound function with which multiple control knowledge of tasks are combined into one compound control knowledge (compound state-action rule) for serving these tasks, while maintaining the development of the individual control knowledge of tasks during a control operation. The proposed method was evaluated in experiments using a robot for tasks of attaining a goal and avoiding obstacles simultaneously. Based on the results, the effectiveness was confirmed through the experiments for the tasks of avoiding obstacle and attaining goal.

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