International Journal of Society Reviews (INJOSER) e-ISSN: 3030-802X
Vol. 2 No. 10, August 2025, pages: 1718~1733

ADAPTIVE CONTROL STRATEGIES FOR ROBOTIC MANIPULATORS USING DEEP REINFORCEMENT LEARNING

Irvan Malay*
Universitas Pembangunan Panca Budi, Indonesia
E-mail: irvanmalay@dosen.pancabudi.ac.id

Muhammad Alfa Rozi
Universitas Pembangunan Panca Budi, Indonesia
E-mail: rozi25646@gmail.com

Ahmad Dzaky
Universitas Pembangunan Panca Budi, Indonesia
E-mail: ahmaddzakysn@gmail.com

Afif Arroofi
Universitas Pembangunan Panca Budi, Indonesia
E-mail: afifarroofi@gmail.com

Mitgever Pandiangan
Universitas Pembangunan Panca Budi, Indonesia
E-mail: geverpandianganmitgeverpandiangan@gmail.com

Haikal Lutfian Hsb
Universitas Pembangunan Panca Budi, Indonesia
E-mail: haikallutfian2@gmail.com

Febrio Ardly Saefsan
Universitas Pembangunan Panca Budi, Indonesia
E-mail: eraslagimain@gmail.com

Abstract

This research examines adaptive control strategies for robotic manipulators using Deep Reinforcement Learning (DRL) through a systematic literature review approach. The main focus of the study is the identification of commonly used DRL algorithms, implementation challenges, and the direction of developing DRL-based adaptive control systems. The study results show that algorithms such as DDPG, SAC, and PPO are effective in addressing the non-linear dynamics and uncertainties of robotic manipulators, both in simulation and real-world environments. However, there are significant challenges such as the