

ABSTRAK

Zidan. 2025. Implementasi *reinforcement learning* pada *trading card game* bertema wayang berbasis *turn-based strategy*. Skripsi. Program Studi Teknik Informatika, FT, Universitas PGRI Madiun. Pembimbing I: Yoga Prisma Yuda, S.Kom., M.Kom., Pembimbing II: Yessi Yunitasari, S.Kom., M.Cs.

Penelitian ini mengembangkan game *Trading Card Game* (TCG) bertema wayang dengan sistem permainan berbasis *turn-based strategy* yang mengintegrasikan kecerdasan buatan melalui metode *Reinforcement Learning*. Proses pengembangan menggunakan pendekatan *Game Development Life Cycle* (GDLC) dan diimplementasikan menggunakan Unity serta *ML-Agents Toolkit*. Pengujian dilakukan dengan metode *Black Box* dan *System Usability Scale* (SUS) untuk memastikan fungsionalitas dan kemudahan penggunaan. Game ini bertujuan menjadi sarana hiburan sekaligus pelestarian budaya lokal. Saran pengembangan selanjutnya meliputi penambahan fitur *multiplayer* dan peningkatan antarmuka pengguna.

Kata Kunci: *Reinforcement Learning*, *Trading Card Game*, Wayang, *Turn-Based Strategy*, *Unity ML-Agents*, *Kecerdasan Buatan*, *PPO*.

ABSTRACT

Zidan. 2025. Implementation of Reinforcement Learning in a Wayang-Themed Trading Card Game Based on Turn-Based Strategy. Undergraduate Thesis. Informatics Engineering Study Program, Faculty of Engineering, Universitas PGRI Madiun. Supervisor I: Yoga Prisma Yuda, S.Kom., M.Kom., Supervisor II: Yessi Yunitasari, S.Kom., M.Cs.

This study develops a Wayang-themed Trading Card Game (TCG) with a turn-based strategy gameplay system that integrates artificial intelligence through the Reinforcement Learning method. The development process adopts the Game Development Life Cycle (GDLC) approach and is implemented using Unity and the ML-Agents Toolkit. Testing is conducted using the Black Box method and the System Usability Scale (SUS) to ensure functionality and usability. The game is designed to serve as both an entertainment medium and a means of preserving local culture. Suggestions for future development include the addition of a multiplayer feature and improvements to the user interface.

Keywords : Reinforcement Learning, Trading Card Game, Wayang, Turn-Based Strategy, Unity ML-Agents, Artificial Intelligence, PPO.