

# IMPLEMENTASI *NONDETERMINISTIC FINITE-STATE MACHINE* PADA NPC (*NON-PLAYABLE CHARACTER*) *GAME* AKASHA'S RETALIARE

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## Abstrak

*Game* adalah interaksi manusia-komputer yang dapat dimainkan oleh satu orang atau banyak orang. *Game* dapat meningkatkan kapasitas memori *visuospatial* diantaranya, *multiple object tracking*, *mental rotation*, dan *change detection*. (Boot, et al. 2008). *Player versus environment*, adalah jenis permainan dimana pemain fokus mengalahkan *non-playable character* (NPC) atau musuh. Dalam penelitian ini, *Nondeterministic finite-state machine* digunakan untuk membuat keputusan terhadap aksi dan reaksi pemain untuk mencegah kemenangan. NDFSM akan berfungsi dengan optimal untuk masalah-masalah *non-linear*. Sehingga dapat mengembangkan NPC yang dapat melakukan aksi-reaksi kombinasi yang sulit ditebak dari tindakan yang dilakukan oleh pemain. Model kualitas ISO/IEC 25010 digunakan dalam melakukan pengukuran kualitas *game* Akasha's Retaliare dengan menggunakan karakteristik dan sub karakteristik pada model kualitas tersebut. Dari hasil pengujian *state transition*, NPC *game* Akasha's Retaliare berhasil melalui setiap transisi *state*. Perilaku NPC menjadi dinamis dan tidak dapat diprediksi yang mengakibatkan gaya bermain akan bervariasi. Dan dari evaluasi karakteristik kualitas ISO/IEC 25010 dinyatakan bahwa *game* Akasha's Retaliare "Sangat Layak" digunakan. Dengan persentase nilai evaluasi 86,17% dan nilai rata-rata 4,3 dari skala Likert.

**Kata kunci:** Akasha's Retaliare, *Finite-state machine*, *Game*, *Non-deterministic finite-state machine*, ISO/IEC 25010.

# ***NONDETERMINISTIC FINITE-STATE MACHINE IMPLEMENTATION FOR NPC (NON-PLAYABLE CHARACTER) ON AKASHA'S RETALIARE GAME***

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## ***Abstract***

*Games are human-computer interactions that can be played by one person or more. Games can improve visuospatial memory capacity including multiple object tracking, mental rotation, and change detection. (Boot, et al. 2008). Akasha's Retaliare, is a type of game where players focus on defeating non-playable character (NPC) as enemies. In this research, Nondeterministic finite-state machine is used to make decisions based on player actions and reactions to defeat them. NDFSM will function optimally for non-linear problems. So as to develop NPC that can perform combinations of action-reaction that are difficult to guess based on the player actions. The ISO/IEC 25010 quality model is used in measuring the quality of the Akasha's Retaliare game by using the characteristics and sub-characteristics of the quality model. From the state transition test results, the Akasha's Retaliare game NPC successfully goes through each state transition. NPC behavior becomes dynamic and unpredictable which results in varied player play styles. And from the evaluation of ISO / IEC 25010 quality characteristics, it is stated that the Akasha's Retaliare game is "Very Feasible" to use. With a percentage evaluation score of 86.17% and an average score of 4.3 on a Likert scale.*

**Keywords:** Akasha's Retaliare, Finite-state machine, Game, Non-deterministic finite-state machine, ISO/IEC 25010.