

**Title of Article :** Critical Analysis of Decision Making Experience with a Machine Learning Approach in Playing Ayo Game.

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**Abstract:** The major goal in defining and examining game scenarios is to find good strategies as solutions to the game. A plausible solution is a recommendation to the players on how to play the game, which is represented as strategies guided by the various choices available to the players. These choices invariably compel the players (decision makers) to execute an action following some conscious tactics. In this paper, we proposed a refinement-based heuristic as a machine learning technique for human-like decision making in playing *Ayo* game. The result showed that our machine learning technique is more adaptable and more responsive in making decision than human intelligence. The technique has the advantage that a search is astutely conducted in a shallow horizon game tree. Our simulation was tested against *Awale* shareware and an appealing result was obtained.