Poker Bot Game using DFA and Monte Carlo Simulation

Abstract—**This document is described about Poker bot algorithm. How it use Deterministic Finite Automata. And how it calculate possibility of winning with Monte Carlo Simulation.**

Keywords-DFA, Monte Carlo Simulation

I. INTRODUCTION

Poker is a comparing card games that players wager over which hand is best. Some popular form is Texas hold 'em which is this project base on. You will play one-on-one against a bot.

We will discuss how Poker game can be use with Deterministic Finite Automata and how the bot calculate possibility of winning with Monte Carlo Simulation.

II. DETERMINISTIC FINITE AUTOMA

DFA is a finite-state machine that accepts or rejects a given string of symbols, by running through a state sequence uniquely determined by the string.

We can assume each of poker game steps as states, and players action as input string. Now we will have DFA of Poker game which will show in another sections.
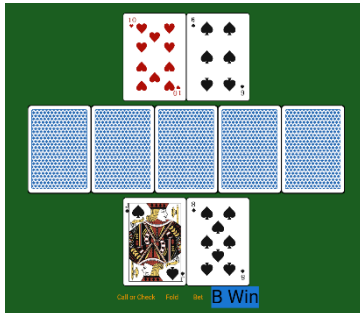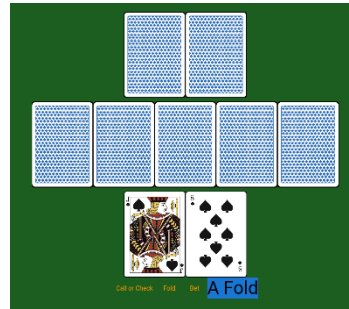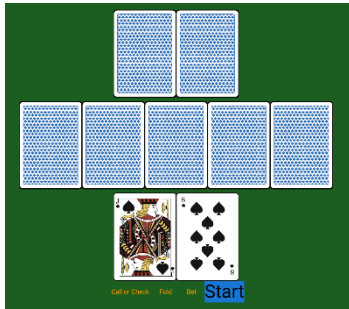
III. MONTE CARLO SIMULATION

Monte Carlo simulation is a mathematical technique that analyze past data and predict a range of future outcomes based on a choice of action.

Our bot use this technique and its data to create simulation models of possible card left outside its and player hands, then use this model to calculate possibility of winning to decide its next action.

IIII. IMPLEMENTATION
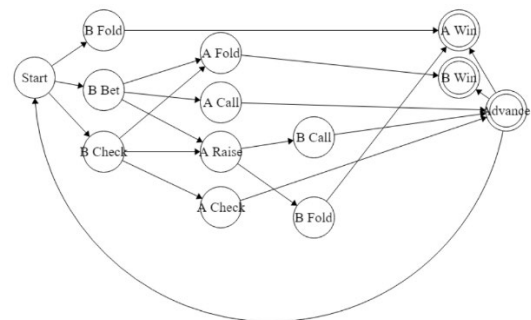
From this DFA we implement to our game, First we are at Start state. If player(B) choose to bet, bot will decide its next action base on calculation with Monte Carlo Simulation and DFA states. In this case, we choose to Check. Current state is now B Check , then the bot decide to Fold, so we move to A Fold State. By the DFA , next state is B Win that's mean we win the game.

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