1. BACKGROUND

- We asked ourselves: what if Siri can play cards with you and make jokes when you lose?
- RummyBuddy is a prototype of such idea. It is a player versus A.I. video game application of the gin rummy card game.
- The development focus is on the A.I. which implements the Monte Carlo tree search method.
- Its final version is planned to include a voiced A.I. with a sense of humor and personality.
- The UX theme is retrofuturism.

2. MONTE CARLO A.I. METHOD

- Monte Carlo uses tree:
  - Root is our current game state
  - Each child node: a new game stage obtained by making a single move.
- Instead of building every possible branches, the A.I. will:
  - Only look at the most Interesting nodes.
  - Run simulations by making random moves until it reaches end game.
  - Use the result of the simulation (win or loss) to score the promising value of each node.
  - This process will be repeated until we say stop.
  - The branch with the most number of simulations, as the A.I.'s move.

3. GAME STATE

- The representation of the world in Rummy Buddy is a 4 x 13 matrix:
  - Row: 4 suits in the deck
  - Column: values of the cards in a suit, A to K.
- There are four states each card can be in:
  - -1 = unknown, 0 = Player Hand, 1 = AI Hand,
  - 3 Discard Stack
- This matrix is fed into the Monte Carlo method to run simulations.
- It is also used to calculate probabilities to add another layer of accuracy for the A.I.

4. TOOLS