# **Poker Combination Probability Given 2 Cards**

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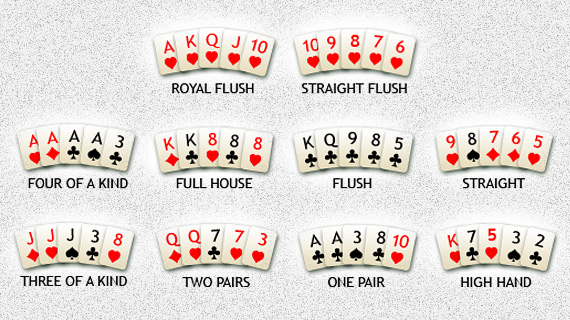
# **Abstract**

Write down a summary of your envisioned project here. A good guideline is that it should be around 300 words single spaced.

Poker is a game where people gamble large amounts of money in order to win more money. The way poker is won is by having a stronger set of cards than your opponents. In poker, you normally create a combination of 5 cards. The probabilities of each winning combination happening can easily be found on wikipedia. To differentiate our project from the one we can find in wikipedia, we will instead find the probabilities of getting a winning combination given the first 2 cards we were dealt with. This is important as in Texas holdem, a variation of poker, 2 cards are given to the player and 3 cards are to be revealed later. We will calculate the probabilities of getting a royal straight flush, straight, 4 of a kind, 3 of a kind, and full house given our first 2 cards. The first 2 cards will be chosen from a dropdown menu. There will be 4 dropdown menus containing the values of the 2 cards. Of course we will have the face and the number. We will create buttons which the player will click on and these buttons will correspond to the different winning combinations. The probabilities of winning the chosen combination will be given in percentage form.

# **Introduction**

In this section, introduce the background of the application you want to do. Provide us some context on related applications / variations that already exist. Additionally, try also to ask yourself these questions:



● Who is your target user?

Our target users are people who are exploring their luck in poker and want to see which hands are considered good and which hands are considered bad. We also want to help future students learn basic probability.

● What problems does your user encounter?

Knowing that poker is somehow a luck based game as you would not know the cards that would be handed to you, in a way this signifies a clear disadvantage towards the population that would receive the lower graded cards. This imposes a clear problem as this would sometimes have money or important items on the line depending on the terms of the game.

● What *value* do I want to provide to the user?

The value that this code gives towards its end-user is the probability that a specific set of cards would have the winning probabilities given a specific set of cards. From here, the end-user may choose to use specific card combinations in order to have the greatest chance of winning.

● Why is this application significant?

This application would be seemingly significant for gamblers all around the world as this would allow them a probabilistic approach to their games in order to win as many games as possible. This would also allow for a more consistent approach to the game, instead of a feeling/luck-based game, it would turn into a numbers game that could be skill based.

# **Functionalities**

This section describes the list of functionalities that you want to build as part of the application. Preferably, this list should be as granular as possible.

#### **You can create these sets of functionality by formulating a table as shown below.**

TABLE I. Table Type Styles

| Persona | Description | Benefit |
| --- | --- | --- |
| Future gamblers | These are people not well versed in the world of poker but want to explore. They may not necessarily know the chances that they will win based on the hands they were dealt with. | These people can learn about the different probabilities that they can win. They will be able to differentiate between a good and bad hand. |
| Students who want to study probability | Cards and dice are one of the first things students learn in probability and statistics. Some students may want to learn about probability this way. | Students can learn about how probability is calculated. |

\*When we say the benefactor, think of a *person* who would benefit from the said functionality. For example, accountant, student, farmer, project manager, etc.

# **Setting your Project Timeline and Individual Contribution**

1. How can you break down the project into a sequence of “milestones"?

From here we can break-down the milestones into three major segments, first would be UI Implementation, then, back-end code implementation and lastly, ABC code testing. The first implementation would require a brainstorming of the UI design, from which the UI would be implemented using the MATLAB application. Next, the back-end code implementation would involve coding for the actual parameters of the use-case as well as integrate the UI with its functionalities of the code. Lastly, the ABC code testing would be the final part of the project which would show the actual finished product, whilst checking for bugs, inconsistencies and problems within the code.

2. If this would be a freelance paid project, what are the roles and responsibilities of each individual?

For most of this project, each member would have its major segment that he or she’s responsibilities would fall into. However, throughout each segment of the project, all of the members would contribute towards the execution of each part. Thus, creating true collaborative work.

Emmanuel John Navarro would take responsibility for the back-end work of the code, while Santiago De Larrazabal will be in charge of the design as well as the presentation of the app. Chantal Nacino will be in charge of checking if everything is moving smoothly. These actions will be done simultaneously in the 2 weekends we have before the demonstrations as well as the final submission.

3. As a pair, given your current learning in our class, what are some actionable steps that you need to do? How would you split the work? List it down and explicitly describe them.

As mentioned earlier, each member would be taking responsibility for each major segment of the work, thus each team leader of a specific segment would assign the group members.

For the UI development:

1. Brainstorm for UI development
2. Create the front page
3. Create the input page for inputting cards used
4. Create the export page for showing the data

For the back-end development:

1. Create the back-end files needed
2. Create the input code for getting the cards
3. Create the code for computing for the percentages
4. Create the code for showing the results to the end-user

For the ABC test coding:

1. Make sure that all parts of the computations are correct
2. Make sure that the UI corresponds to the correct parts of the code
3. Find inputs that create bugs for the code
4. Release for public use.

4. For each action, who is assigned to do those actions?

Code - Navarro

Design and calculations - De Larrazabal

Checking - Nacino

Demo - All

5. For each action, when should it be performed?

All actions will be done on the 2 weekends before November 27. On November 27, we will create a demo video and upload it on youtube.

6. How and when will you communicate to do/discuss the project deliverables?

We will communicate through the messenger app and share our files on the github repository.

7. How will you track your progress? Always recall it’s hard to collaborate when you plan to cram. That’s why, we want to keep track of each individual’s contribution so that both of you know each individual's strength and adjust accordingly.

We will track our progress by always sending our files to github. We will also inform the group if we have edited any aspect of the file. This is because we cannot collaborate online on Matlab.

8. It’s not a good idea to create “dependencies”. For example, person A will work for milestone A. Afterward, person B will be on milestone B. The reason for that is that person B is always idle while person A is working. In case that person A has some midnight oil to burn, the overall project is immediately delayed. A better approach in splitting the work is to think in an “asynchronous” manner, wherein each member can work independently depending on their availability, rather than waiting for others.

The actions we have put in #4 are only the main assignments of the team members, we will all help where it is necessary.

Please revisit your action items and assignment, are there any strategies you can formulate so that dependencies are removed/minimized? If so, please write them down here.