**Project Progress Report**

**Project Name:** Project Poker

**Project Members:** Prasanth Reddy Yerradoddi

Arish Balasubramani

Cheryl Maria Jose

Prasanth Kannan

Rajaputhri Maharaja

**About Project**

This project is about predicting the poker hand. “**The intent of this challenge is automatic rules induction, i.e. to learn the rules using machine learning, without hand coding heuristics**. Pretend you are in a foreign land, have never played the game before, are given a history of thousands of games, and are asked to come up with the rules.” Poker is a five card game. It has a many rule. Based on some of the features we would like to predict the hand. For example, straight, pair etc. We will be concentrating on about 5 features to predict the hand. This project idea was taken from kaggle.com. In this project we will be using card rank and card suit. Using the card rank we will be predicting the feature. Say, for example if we have 5 cards like (3,4,5,8,1) then it would be 3 straight cards, and similarly for many other features.

**Problem:**

One way to address the problem of evaluating results from a rule induction algorithm is to generate a set of random data that conforms to a pre-specified set of known rules. The data can optionally contain noise, incorrect and missing values, as well as non-essential attributes. The quality of the algorithm can be judged by the correlation between the original rules and the discovered rules. The drawback to this method stems from the fact that these datasets are purely abstract and have no real-world meaning.

**Progress**

We have used deterministic approach to conclude the hand. For this part we have randomly dealt 5 cards for 9 players and came up with a logic to determine the winner. We have trained and tested the training data set using Logistic Regression algorithm. We obtained about 50% accuracy with that approach.

**List of features**

1. 5 cards straight (Ex. 3,4,5,6,7)
2. High card (Ex. 9,2,5,1,7)
3. One Pair (Ex. 7,7,3,5,1)
4. Two Pair (Ex. 1,1,2,2,3)
5. Ful House (Ex. 7,7,74,4)

**What next?**

We will be predicting the hand based on features. Then with this prediction we would like to train and test with the available data set. We will be increasing the accuracy above 90% with this approach. The order of cards is important, which means there are 480 possible Royal Flush hands instead of just four. Identify those, and the other 311,875,200 possible hands correctly, and you’re in the money!

**Members Contribution**

Rajaputhri Maharaja: She was responsible for adding the cards to the list and randomly dealing to the players and making sure that there were no duplicate cards and also printing the cards.

Prasanth Kannan: He was responsible for writing the logic for high card and one pair and two pair.

Cheryl Maria Jose: She analyzed the data set available and also came up with the logic for three of a kind and four of a kind.

Arish Balasubramani: He analyzed and the data set and trained the available data set using Logistic regression algorithm. He also found out the accuracy.

Prasanth Reddy Yerradoddi: He had the opportunity to lead the team and manage things. He also wrote the functions for straight, flush, full house. He also did coding part to determine who is the winner among multiple hands.

**Poker Hands:**

The following table shows many different ways of scoring a poker hand.

