Project Proposal

**1.**

**Q:** Title of your project

**A:** The title of the project is “Poker Rule Induction”.

**2.**

**Q:** What type of project did you choose?

**A:** Type 2: Empirical comparative study of different approaches for solving an AI problem

**3.**

**Q:** In what area do you work? Arts, medicine, finance, etc? Or maybe your project is entirely algorithmic and independent of the field, then just mention that.

**A:** We are working in the area of entertainment; the project is based on training a model to induce the rules of a poker hand. Therefore, this project is heavily related to the entertainment industry where time could be saved in programming expert gaming systems, by instead creating models that learn to induce the rules of different games from raw data

**4.**

**Q:** Goal and purpose of the project:

* What are your goals? What are trying to achieve and why is it interesting and/or important?

**A:** The goal of this project is to train a model to induce the rules of a poker hand without ever being told explicitly what the rule is.

This problem does not present itself as being immediately important, but it can be extended to a diverse set of problems where explicitly programming in each rule would be time consuming. Instead having a model that we could adapt to learn these rules without any human input, from a large dataset would be hugely advantageous.

The problem is interesting as it is fundamentally very simple, but it allows for many approaches and different perspectives on the same problem. Furthermore, checking the correctness of the program is extremely simple as we must only scrutinize the rules that it has determined for each hand, but the process by which the model learns these rules is not at all straightforward.

**5.**

**Q:** What is the link between your project and this AI course? Will you use some knowledge that we have learned in class? If so which? If not, will you try to learn new approaches? Which ones?

**A:** The project links to the course as we can employ many concepts presented in the course material in order to train our model. We will be using a Genetic Programming and an SVM approach as discussed in class.

**6.**

**Q:** Anticipated approach. Describe what you plan to do:

* Type 2: Which approaches will you compare? Did you find a dataset? If yes which? If no, do you have any leads to finding a good dataset?

**A:** We will compare an approach using a Genetic Programming algorithm and an approach using SVM to the Poker Hand Rule Induction problem. We have found an excellent data set of 25,010 poker hands in the training set and 1,000,000 in the test set. The data set was given in the problem description under the Kaggle competition. This dataset was created by Robert Cattral and Franz Oppacher.

**7.** Work distribution. Who will do what? Give the objectives of each member of the team. In two to four sentences explain why this is a sufficient amount of work for the project given your team size.

**Mitchell:** My responsibilities revolve around doing research on both approaches to the problem and how we will go about implementing these approaches. I am also helping with the task of feature engineering and deciding what features will best train our model.

**Dilanga:** My responsibilities revolve around the Data framework that we will be using to structure the data in the project, making it accessible and formatted in an efficient manner. I am also responsible for the functions that will help both our approach recognize the different hands in the game.

**Group:** We are both responsible for the presentation and in implementing both approaches to the problem. Although, each of us will have a greater role in implementing one approach. This is a sufficient amount of work as we are implementing 2 distinct approaches to the problem and we are only two members. Furthermore, we are both responsible for the presentation and whatever graphics (overheads, slides, graphs) that we choose to include in our presentation.