To What Extent Does the Knowledge of an Opponent’s Playstyle Aid New Players in Learning Poker?

# Abstract

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# Introduction

This report further develops and provides a conclusion to the literature review, methodologies review and action plan that were recently conducted (Huxtable 2018, 2019a, 2019b). Firstly, the scenario will be addressed, this will draw on elements from the accompanying documents listed above. This will allow for a more detailed analysis of the research question and possible solutions. It has previously been decided that addressing the question ‘To What Extent Does the Knowledge of an Opponent’s Playstyle Aid New Players in Learning Poker?’ will require the development of a software application in order to collect necessary data. The requirements and designs of this software will be addressed before the implementation and testing is documented.

The data collection will allow for an analysis of the original question before an evaluation of the software can be conducted. A final personal evaluation will be presented to further highlight the evaluation of the project.

The subject of poker contains many bespoke terms and phrases. As with the literature review, a full table of definitions can be seen in the appendices, Figure 1, as these terms will frequently be used throughout the report.

# The Scenario

This section will bring together the work from the literature review, methodology review and action plan to inform the next steps of the project (Huxtable 2018, 2019a, 2019b). The research question demands detail be given in multiple areas in order to provide a clear representation of the current level of previous research that has gone into the field and the necessary requirements in continuing this research. These areas include the fundamentals of mathematics in poker, the way in which new players approach playing poker, the poker heads up displays (HUD) that are currently available and their use of appropriate human computer interaction (HCI) to provide an intuitive environment.

Understanding how beginner players approach playing poker is necessary in understanding whether additional knowledge, such as the understanding of an opponent’s playstyle, can help them improve their results. Hardin states how ‘beginner and low-stakes live poker players’ often go by the phrase ‘“You play the player, not the cards”’ (2018, 7). Although it is widely accepted that experts use this ideology, this is never used as the sole director of play, it is also imperative that players implement mathematics in order to optimise their decision making. Finding a compromise between mathematics and intuition is not achievable for players who are new to poker mathematics concepts. Furthermore, analysing every detail of every opponent within a game of poker is inconceivable to even the most efficient expert. An example of the level of detail that can be used to inform decisions is the percentage of times a single opponent has called to a three-bet when in the big blind position. Keeping track of the actions of each player over tens or hundreds of rounds is not possible to this degree. Online poker allows the option of using a HUD to provide this level of detail.

HUD’s provide full statistics to online poker games, allowing players to make fully informed decisions. However, this level of detail is not necessary for beginners and can be confusing. It is better for new players to focus on fixing their ‘most expensive mistakes’ instead of attempting to fix the finer details of their play (Miller, Sklansky, and Malmuth 2004, 5). This is where the inspiration for the research question was identified; the commercially available HUD’s do not use basic HCI principles in order to make them suitable for inexperienced poker players. Commercial HUD’s overload users with information (the vast majority of which is not needed to become an incredibly skilled poker player) while the largest mistakes players make, such as folding too much or not enough, are overlooked.

The question at hand addresses one of the core mistakes made by new players; a lack of understanding of opponent’s playstyles. Through the development of a HUD that focusses on providing the necessary information, in a manner which meets HCI principles, it will be possible to see if new players can improve their play not only though the use of the information provided by the HUD, but also by allowing them to focus on other key areas of weakness as the HUD will remove the need for players to attempt to calculate opponent playstyles.

The methodology review compares different development methodologies before identifying that rapid application development (RAD) is the most suitable option for this project. This allows for an increased level of freedom within the development process to adapt and change elements of the application from the original designs. The methodology review discusses how this is important due to the nature of the project and the language it is being developed in (Huxtable 2019b). The RAD model also provides a suitable development framework for the future of the project beyond the current timescale. The reason for this is RAD allows for individual aspects of the application to be developed separately with a later integration date. This means the application can be developed beyond the timescale of this project and additional features can be added to further the research.

***Lit review***

*~~Maths~~*

*~~HCI – Stats analysis~~*

*~~Beginner poker play~~*

***Methodology***

*~~RAD – allow for changes to design throughout dev. Allows additional elements to be added on (block framework)~~*

*Data collected*

*Analysed*

*Then research question addressed in evaluation*

***Action Plan***

*Requirements*

*Justification of R question*

*Constraints*

*Resources*

*Risks*

*Plan*

# Requirements

It should be noted that many of the details of these requirements have been discussed within the action plan, this section will expand on these where necessary and provide additional detail into why these requirements were set and how they will be achieved (Huxtable 2019a). Each requirement has been set predominantly to enable the software to be used to collect appropriate data that relates to the research question.

### Suitable Compatibility

In order to collect data that can then be analysed, the software will provide a HUD for the online poker client pokerstart.uk (“Poker Stars” 2019). This HUD will draw on information provided by the client and should then display the results in a separate window. The use of the RAD methodology will allow for additional clients to be catered for at a later date. This is discussed within the design section.

### Human Computer Interaction Standards

One of the two main premises of this research question is that commercially available HUD’s do not provide HCI standards that are suitable for beginner poker players. It is therefore vital that the application developed meets HCI standards. Providing an application with an intuitive use, ensures that the information the application provides can be understood. This ensures data collected from users can highlight whether the information provided, the knowledge of an opponent’s playstyle, can aid beginner poker players.

If HCI standards were not met, an additional variable is added to the data that is collected. This variable determines whether the users understand the information that is being provided to them. With this, there can be no distinction between whether users understand the information that provides the opponent’s playstyles or whether the knowledge of an opponent’s playstyle does not aid new players in learning poker.

### Calculate Player Profiles

The second premise of the research question is that the knowledge of an opponent’s playstyle can aid new players in learning poker. In order to address this, new players have to be presented with the information of their opponent’s playstyle. A table of the playstyles that will be used can be seen in the appendices, Figure 2. These will be calculated through the use of the hand history (HH) provided by the poker client. This is discussed in more detail in the designs.

### Update Player Profiles Live

Winning in poker is about the long-term increase and not about large wins in the short-term. Because of the high variance of poker statistics when viewing a small sample size, it is imperative that the application being developed uses the largest possible sample size for creating player profiles. To achieve this, the application will draw data from the HH in real time, allowing player profiles to be updated to new statistics as the game progresses. This is also discussed in more detail in the designs.

# Design

*Visual*

*Code:*

*Get HH*

*Save necessary data from HH*

*Manipulate data from HH*

*Display HH (link back to visual designs)*

*HCI aspects:*

*House style*

*Button placement*

*Display necessary information*

# Implementation

General design & development docs

Including managed Project Plan.

Briefly discuss the design and development of the software and what you expect it to do ie what will the software output for you to use.

# Testing

# Project Management

Link to project logs

You need to include some of the main project management processes such as a feasibility study; deliverables; scope; risks; and a basic change management process. You will also need to include a full project closure report.

Make sure you have a complete and updated project plan.

# Evaluation

### Question Evaluation

### Requirements, Design & Implementation Evaluation

### Testing Evaluation

### Project Management Evaluation

# Data Collection

### Research Methodology

Evaluate and choose methodology

Provide some details of the type of methodology and try to reference a source for the use of this methodology in this type of research project.

### The Use of Software in Data Collection

Link to the software & how it helps gather data

How the software gathers data. The form in which this data is output from the software. How you intend to collate the data, will there be different ways in which to collate the data ie selecting different data sets.

### Other Data

Any other data collected 🡪 other research projects etc.

If possible or appropriate refer to other research which gathers similar data and the same or similar methodologies. This can be the justification for the selection of your own methodology.

# Data Analysis

### Reviewing Data

### Analysing Data

Make sure you provide alternative analysis where possible ie looking at different data sets from the same data source and coming to different conclusions. Discuss any differences you find.

### Evaluating the Analysis

# Conclusion

# Personal Evaluation

# Appendices

### Glossary

|  |  |
| --- | --- |
| **Term** | **Definition** |
| Bet | A bet is the first raise in each round of betting. |
| Big blind | Refers to the player two to the left of the dealer, or one to the left of the small blind. This player is forced to place a single bet before the hand’s are dealt on the flop. |
| Button | The button, or dealer button, moves around the table with each hand, meaning each player deals once in every full rotation. |
| Call | After a bet or a raise by a player, any other player who wishes to stay in the hand is required to meet the largest raise value, this is called ‘calling’ or a ‘call’. |
| Community Cards | This refers to the five cards placed on the table on the flop, turn and river. |
| Draw | When a card(s) is placed onto the table – flop, turn or river.  Also, when someone is drawing to a hand – requires 1 or more cards to complete a hand such as a straight or a flush. |
| Effective Stack Size | The smallest stack size between two players – this shows the largest amount of money that can be won in a heads-up hand between these two players. |
| Flop | This refers to the three cards placed on the table after the first round of betting has closed. |
| Hand | This refers to the two cards each player is dealt at the start of a round. These cards combine to make hands of different strengths.  This can also refer to a round of poker. |
| Hand History (HH) | A players HH is a document noting the history of hands they have played. This includes all moves they make as well as the hand itself. HH is recorded |
| Heads-up | Heads-up is when a poker hand only has two active players, either the game only has two players or the action has folded down to two players. |
| Hero | This refers to you or the person whose hand is being spectated. |
| Hit | When a draw or hand has been made. |
| Hole cards | This refers to the Hand. |
| Loose | This is a playstyle. A loose playstyle refers to a player who plays many hands, both strong and marginal. |
| Miss | When a draw or hand has not been made. |
| Nuts | The best possible hand. |
| Outs | An out is a card that increases a player’s hand strength, making their hand most likely to win. |
| Playstyle | This refers to how a player approaches the game and the tactics them implement. |
| Pot | The total of the money or chips that have been bet. |
| Position | The position a player is in relation to the dealer button. The position of a player will often dictate their playstyle, this is because it is often beneficial to act last – on the button or closest to the button.  Positions:  BB – Big Blind  SB – Small Blind  BU – Button  CO – Cut Off  MPx – Middle position (x = number, 2, 3) |
| Raise | A raise is when a player bets more money into the pot.  The first raise is often called a ‘bet’. |
| River | This is the fifth and final card placed on the table once the turn betting round has completed. |
| Small blind | Refers to the player one to the left of the dealer. This player is forced to place a half-sized bet before the hand starts. |
| Three-bet | Used to refer to the third be in a round. The first being called a bet, the second being called a raise and the third a three-bet. |
| Tight | This is a playstyle. A tight playstyle refers to a player who plays few hands. The hands they play are typically very strong. |
| Turn | This is the fourth card placed on the table after the flop betting round has completed. |
| Villain | This refers to any opponents you or the person who is being spectated is playing against. |

Figure 1 – Glossary

|  |  |
| --- | --- |
| **Name** | **Profile** |
| NIT | A very tight player. |
| TAG | A tight and aggressive player. |
| LAG | A loose and aggressive player. |
| LP | A loose and passive player. |
| Calling Station | A player who calls frequently and does not often fold once invested in a hand. |
| Maniac | A player who is gambling without much thought for their opponent’s hand. |

Figure 2 – Player Profiles

### Designs

### Source Code

# References

Hardin, Alton. 2018. *Essential Poker Math: Fundamental No-Limit Hold’em Mathematics You Need To Know*.

Huxtable, Ben. 2019a. “Action Plan.”

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