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The use and regulation of online poker bots

The use of computer programmes to play online poker is not illegal, but does violate the terms and conditions of some online gambling operators. Professor Mark Griffiths, of the International Gaming Research Unit at Nottingham Trent University, examines whether using automated programmes in a skill environment is a form of cheating and needs regulatory intervention.

Online poker is now big business and players are continually in search of an edge. One such edge is in the shape of 'poker bots' (online poker robots). Poker bots have been around since at least 2004[1], but there have been an increasing number of reports questioning their legal status[2]. A poker bot is programmed to play poker, but can disguise itself as a player (i.e., online poker players buy poker bots to play the game for them). Some claim they are impossible to beat, because they are programmed for tasks such as card counting and reading other players' poker playing behaviour. Unsurprisingly, most online poker sites consider poker bot usage as a type of cheating. Consequently, the vast majority of poker sites prohibit their use. For instance, Full Tilt Poker says in its terms and conditions:

'The use of artificial intelligence including, without limitation, 'robots' is strictly forbidden in connection with Full Tilt Poker. All actions taken in relation to Full Tilt Poker's games and tournaments must be executed personally by players through the user interface accessible by use of the game software.'

However, just because poker sites do not like these technologies, this does not necessarily make them illegal. Put simply, players using poker bots may have broken the site contract, but they have not broken any law. At worst, if online players are caught using poker bots, their winnings are typically forfeited. This is legal for online poker sites to do, as long as it is clearly stated in their terms and conditions when players initially sign up to the site. In addition, Blincoe[3] claims that some poker sites pass on details of these 'cheating' players to other poker sites to prohibit their play. The fact that no online poker sites appear to report players caught using poker bots to the Crown Prosecution Service also suggest that this practice is perfectly legal[4]. In blunt terms, pure statistical analysis is legal. Players hacking into the site - to obtain data that they have no right to use - is a criminal offence, as is the use of stolen or cloned cards to fund playing.

The fact that poker sites frown upon the use of poker bots appears to mirror other so-called 'cheating' (but legal) behaviours found in the offline world (e.g., card counting in blackjack). It could be argued that there are double standards where technology is concerned. Gaming operators appear to love technology if it helps them make more money from punters, but hate it if it helps their clientele redress the odds back in their favour by using sophisticated software.

Obviously, players who use poker bots are to some extent trying to 'beat the system', but they are not criminals. Furthermore, in online poker playing, there are other salient issues to take into account. The most obvious example is an online poker player being unable to see other players and figure out their opponents' 'tells', i.e., the non-verbal clues as to the cards they might have. However, it also works the other way, i.e., online players have no need to worry about their own tells being revealed to the other online players. Poker bots are useful for calculating odds, but the 'bluff' (i.e. the ability to intuit when and how to successfully play [say] a low pair like a full house) is typically beyond computer programming[5].

Bluffing in poker is primarily based on unexpected and/or illogical actions, although artificial intelligence programmes are being designed in an attempt overcome this. For instance, poker bot computer programmes are now being pitted against each other and generating strategy from play. Here the programmed 'players' learn to play by inferring the game's rules from their own hands, those of their opponents, and the outcome of the games. Using artificial intelligence, some bots have successfully started to bluff, having calculated that it increased the chances of winning against still-cautious computer opponents[6]. According to Blincoe[7], the only thing keeping the online human poker playing community in with a chance is the sheer difficulty, tedium and cost-effectiveness of running the bots at a profit.

Despite technological advance, poker bots do not guarantee success. This is because poker is a game of imperfect information unlike (say) computer chess programmes. Some cards in play are concealed making it impossible for a computer programme to deduce the precise situation. Poker bot programmers therefore implement systems using a variety of imperfect techniques (e.g., Bayesian theory, Monte Carlo simulations and/or neural network algorithms). One of my research colleagues, Dr Adrian Parke at the University of Lincoln, has spent many years conducting cyber-ethnographic research into online poker players. In his interviews with online poker players, they stated that they actually wanted

other players to use poker bots because they felt 'they were predictable and therefore easy to read'. Furthermore, they said programmed poker bots will always be 'readable' because by necessity 'they must follow a pre-determined logic, but human cognition is boundless'[8]. Although using game theory is imperfect, methods are currently being developed by artificial intelligence researchers (e.g., the University of Alberta's Poker Research Group[9] in Canada) in an attempt to perfect poker strategy in two-player games, in addition to systems being created for the multi-player game[10].

There are some who already believe the writing is on the wall for online players. For instance, Ayres[11] asserts that 'online poker may become a suckers' game' that humans will have no chance of winning. In the US, poker players have argued for online legalisation by claiming that poker is a game of skill (which in part it is). But ironically - according to Ayres - it is because poker is a game of skill that the chances of winning by humans are therefore undermined. In online situations where there are no 'tells', computers may be better at predicting an opponent's hand from their past play. Furthermore, Ayres argues that poker pots can play randomised strategies much better than humans. His argument is that human brains are 'hardwired' to see patterns, but it is extremely difficult for humans to generate truly random behaviour.

Worldwide, there are countless poker strategies utilised by poker players. Although it is possible for online players to include these strategies on the internet, it is not easy to do. Parke[12] claims it is much easier to guess the strength of the other players during a live poker game. In online poker, a player can only tell the strengths and 'tells' from the bets that are being placed.

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However, some poker bot programmers are designing bots to specifically play against weak players. Blincoe[13] reported an interesting case of a 'bot master' who designed a programme to use only in low-limit table games where weaker poker players tend to predominate (i.e., less than £50 a day). Good players would beat the bot master's programme, but not the weaker players. The bot master interviewed claimed to make an annual return of around £40,000 working on gaming sites. Furthermore, this was tax-free. However, his bots did not play 24/7, as they would have been easily spotted by the gaming operator. Players also think they can spot bots because they win and (obviously) do not chat during games. However, it has also been noted that really good players do not tend to chat either, especially if they are playing many online poker games simultaneously[14].

Others argue that poker bots are no match for humans and that the complexities of the game and the changing strategies ensure that creation of a programme that can 'read' opponents' cards using screen scanning techniques and respond in real time is years away. However, as mentioned earlier, the University of Alberta's Computer Poker Research Group has developed an artificially intelligent automaton known as Vex Bot. This is capable of playing poker at a high level, but only in 'two player' mode. Vex Bot is being used the research group to test the frontiers of artificial intelligence, but it may become a blueprint for programmers with a desire for money making.

My own take on all of this is that even if the use of poker bots by online poker players is a form of cheating - something that is certainly debatable - it is certainly not illegal and is unlikely to be in the future. If the gaming industry can harness technological advance to increase profits, there is no moral (or other) reason why punters should not be able to do the same.

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