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Poker Bots Invade Online Gambling

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Bryan Taylor, 36, could not shake the feeling that something funny was going on. Three of his most frequent opponents on an online poker site were acting oddly, playing in ways that were so similar it was suspicious.

Mr. Taylor, who started playing poker professionally in 2008, suspected that he was competing against computers — specifically bots, short for robots — that had been programmed to play poker and beat the odds.

And he was right. After an investigation, the site Mr. Taylor frequented, [PokerStars](#), determined that his opponents had been computers [masquerading as people](#) and shut them down.

Poker bots are not new, but until recently they were not very good. Humans were better at the nuances of the game — at bluffing, for instance — and could routinely beat the machines. But artificial intelligence has come a long way in the last few years, far enough that poker bots are now good enough to win tens of thousands of dollars on major game sites, which are clamping down on them.

The bots that Mr. Taylor identified on PokerStars were shut down in July. In October, another large poker site, [Full Tilt](#), informed customers that it had taken action to limit the proliferation of bots, including freezing some accounts. (Internet gambling is illegal in the United States, but online casinos operate offshore.)

“PokerStars is continuing to invest substantial resources to combat bots,” Michael Josem, a security manager at the site, said in an interview conducted via e-mail. “When a player is identified as a bot, PokerStars removes them from our games as soon as possible.” Their winnings are confiscated, he said, and the company will “provide compensation to players when appropriate.”

Yet poker bots are openly for sale online. [Shanky Technologies](#) sells licenses for the Holdem Poker Bot — the target of Full Tilt’s crackdown in October — for \$129 per year. Brian Jetter, a co-founder of Shanky, said in an e-mail interview that more than 400 of his customers had been banned from Full Tilt. (Full Tilt did not respond to requests for comment.)

Mr. Jetter said that Full Tilt had seized more than \$50,000 of his customers’ money, a figure that he called a “conservative estimate.” He added that the gaming site was forgoing at least \$70,000 per month in revenue by shutting down his customers’ bots.

“They really must have wanted us gone,” Mr. Jetter said. “We don’t think the other poker rooms we support will make a similar financial decision.”

According to the Web site PokerScout.com, which bills itself as an Internet poker clearinghouse, there are more than 600 Web sites where people can play online. Mr. Jetter says that while Shanky does not have any “official relationships with the poker rooms,” some of them look the other way when bots play.

The science of poker bots is still in its infancy, which may be one reason that some gambling sites do not crack down on them. Unlike [Watson](#), the [I.B.M.](#) computer that won on “Jeopardy!,” poker bots are not stellar players. But they are getting better, thanks to advances in the way computer scientists program software to play games.

“The large majority of bots are very bad,” said [Darse Billings](#), a consultant to PokerStars and Full Tilt and the former chief of data analytics at Full Tilt. “More than 90 percent are losing money.”

It turns out to be a lot easier to build a perfect chess player than a poker whiz. Chess is a perfect information game: if you look at a chessboard, you know the exact state of the game from both players’ perspectives. And the rules of the game are not affected by chance, like the drawing of a card.

But in poker, an imperfect information game, there are many unknown variables. A player does not know his opponents’ cards and may not know their style of play — how aggressive they tend to be, for instance, or how often they bluff.

Unlike a chess bot, a poker bot does most of its work before the match, running millions of simulations before the first card is dealt. But even with the large amounts of memory available with today’s computers, storing — or even computing — information for every possible scenario would be implausible.

The best poker bots in the world include those from the [University of Alberta Computer Poker Research Group](#), which is nearly 20 years old. Professor Michael Bowling, who has led the group since 2005, says the breakthrough came in 2003, when researchers decided to change their approach, shifting away from the methodology used to build chess bots.

In 2006, the inaugural [Annual Computer Poker Competition](#) created more interest in poker-playing computers and established a friendly rivalry between the University of Alberta and [Professor Tuomas W. Sandholm’s poker research group](#) at [Carnegie Mellon University](#) in Pittsburgh.

Today, Professor Sandholm said, poker bots “can rival good players, but not the best — yet.”

Many of the poker bots available on the Internet were built by programmers as a personal exercise or hobby. Some buyers think they can make money with the bots, but others use them in intellectual exercises, Mr. Jetter said. Buyers can program their bots to use different decision-

making strategies in various circumstances, and then observe which outcomes are more successful when applied in real-world games.

“Using a poker bot is in fact a natural extension of the game of online poker,” said Mr. Jetter, who added that Shanky has sold 5,000 copies of its Holdem Bot software since it was introduced in early 2008. “Creating your own playing profile is a fun challenge that many players enjoy.”

That argument does not go over well at sites like PokerStars. Last year, after it was tipped off by Mr. Taylor, the company found 10 bots and returned more than \$57,000 to players who had lost money to them.

The poker bots’ arrival may be just another sign of an emerging world where humans, knowingly or unknowingly, encounter robots on an everyday basis. People already talk with computers when they call customer service centers or drive their cars.

As for Mr. Taylor, his cleverness in spotting bots won him a job. He now works full time for PokerStars, where “he is helping to protect the integrity of our games,” Mr. Josem said.

And so the human wins — this time.