How do I create a fair but challenging bot for my game?

What is fair?

What is challenging?

What kind of bots are there?

Static Bots

The oldest technique out there is to predict everything that might happen in the game and write conditional statements. This has been very popular in the retro games like Pacman and Pong. The reason it's not being used anymore is because there are way more efficient ways to create game bots. With if else statements you might have to predict hundreds of scenarios, this leads to lots of time being lost, missing possible scenarios and unmaintainable code.

https://www.freecodecamp.org/news/how-to-build-an-ai-game-bot-using-openai-gym-and-universe-f2eb9bfbb40a/

https://www.gamedesigning.org/gaming/game-bots/

Dynamic Bots

You can make your bot learn from data that has been collected by earlier attempts. For example, you let your bot play a single level 1000 times. Every time it does something good you give your bot points for that attempt. If it does something bad, you take away points. Like this you can check what attempt gave the most points. This technique goes under the name Deep Learning.

https://www.gamedesigning.org/gaming/game-bots/

Static and Dynamic Bots

It's also possible to combine these two strategies. For example, the static part would be to walk to an objective, and the dynamic part would be the strategy it uses to defend itself on its way.

https://www.gamedesigning.org/gaming/game-bots/

What fits my game the best?

In my game, a hangman like game, the easiest to code and most challenging bot would be to just write an algorithm that checks what letter must be guessed and guesses that letter. But that would make it boring. I want to create a bot that has the same sources as a human. This can be done by making my bot play the game lots of times and collect data. With this data it can make guesses based on experience instead of just looking at the word.