Artificial Intelligence in Computer Games

Many characters in computer games are controlled using artificial intelligence (AI). They appear to react to what you do, and look like they are taking part in the gameplay. For example, in a football game, your team players will pass the ball to you, and try to score goals. The opposing team will try and tackle you and save the goals!

How can we code commands for these players so they look real, even though controlled by a computer?

Football example

You'll need a friend for this game, and some space to play football (or a table top football game!)

Note: you can easily make a similar version for other sports or activities as well.

One of you can be the "Human Player" the other person the "Computer"

- First, give the Computer person one or more of these instructions (there's two blank ones for you to fill in!). The Human player can do what they want. Try passing the ball to the Computer person, and getting them to follow the instructions. Does it work as a game?
- Its not much of a game if they have only one instruction. Maybe give them a choice of two to choose from each time they get the ball. Is that any better?
- With the help of a third person, get them to pick a *random* instruction for the Computer person each time they get the ball.
    - How many do you need to make the game feel "real"?
    - Are there any pairs of instructions which work well when used together?
- Could you write a set of instructions which can be used for a *goalkeeper* position?

Shoot for goal as soon as you get the ball!

Do a neat football trick and pass back

Run for 3 seconds towards the goal

Dive to the ground shouting "Ref!"

Pass back to the human player!

Kick the ball into an open space