

Preliminary Functional Layout

Define what the system should accomplish by specifying the high-level functions of the system. This task specifies the purpose of the system.

CADDIE - "The expert golfer"

This Expert System has the expert knowledge of a pro golfer. CADDIE will tell you what golf club to use and how to swing the club given golf course conditions, weather, your ability, and where you are on the course.

The main functional components of CADDIE are the User Interaction and Recommendation. The User Interaction functional component can further be described by the following sub-functional components; Environment Description, Course Description, Player Ability Description, and Player Course Placement. The Recommendation functional component can further be described by the following sub-functional components; Club Recommendation and Swing Recommendation.

CADDIE will analyze the information inputted by the user about the environment, course, player and placement and determine the best club to use and how to swing the club based on the CADDIE knowledge base.

To make CADDIE portable to use, the User Interaction component would have to be implemented on a wireless handheld device that could be used on the golf course. The weather conditions, course description, and player ability would only have to be entered once and could be done before the round of golf is played. That way, while playing each shot, the only interaction needed with CADDIE would be to enter in the shot specific details. A wireless device could also be installed on each golf cart and the user could interact with CADDIE while sitting in the golf cart looking over his or her next shot.

Another practical application of CADDIE is to use this expert system in a golf video game. CADDIE could be the "brains" behind the computer golfers or make recommendations to the players for their next shot in the video game. To do this the User Interaction portion would have to be transformed to interface with input from the video game.

The following is an example user interaction and recommendation using the CADDIE expert system.

Weather User Input

CADDIE: Is it raining?

User: No

Course User Input

CADDIE: Is the grass wet?

User: No

Player User Input

CADDIE: Do you have a golf handicap?

User: No

CADDIE: What is your average driving distance in yards?

User: 230

CADDIE: What is your average seven iron distance in yards?

User: 150

CADDIE: Do you naturally slice the ball? Also known as "playing a slice"

User: No

CADDIE: Do you naturally hook the ball? Also known as "playing a hook"

User: No

CADDIE: Do you have the ability to fade the ball?

User: Yes

CADDIE: Do you have the ability to draw the ball?

User: Yes

CADDIE: Do you usually make the green in regulation?

User: Yes

CADDIE: When caught in a green side sand bunker, do you usually make a sand save?

User: No

CADDIE: On average, how putts per round do you have?

User: 36

Player Placement Input

CADDIE: What is par for the hole?

User: 4

CADDIE: What is the yardage of the hole?

User: 375

CADDIE: Are you on the tee, fairway, green, or other?

User: fairway

CADDIE: How far are you from the hole in yards?

User: 130

CADDIE: Is the green above your feet or below your feet or even with your feet?

User: below

CADDIE: How many yards is the green below your feet?

User: 25

CADDIE: Are there any obstructions in flight path of the ball to the green to the above, right, left, or none?

User: above

CADDIE: How far away is the obstruction from your ball in yards?

User: 40

CADDIE: How high off the ground is the bottom of the obstruction from your ball in yards?

User: 25

CADDIE: How high off the ground is the top of the obstruction from your ball in yards?

User: 35

CADDIE: Is the ground your ball lies on flat or sloping?

User: flat

Club Recommendation

CADDIE recommends that you use a nine iron for this shot.

Swing Recommendation

CADDIE recommends that you hit the ball with a full swing in a normal stance aiming directly at the center of the green. If you strike the ball well you will clear the obstruction in front of you by going over the top of it.

What is your next shot?

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