**Fuzzy Logic**

***It’s all a little fuzzy.***

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    The AI opponent uses fuzzy logic to decide if it should run away from the player or to get the food. This is accomplished by utilizing a fuzzy state machine that  accumulates a List of Actions that we use for states. Each state holds values that determine the behaviour of the AI. It gets these state from a linear fuzzy method. The linear method takes in three parameters: the value which represents the distance between the AI and the player, the minimum range value, and the maximum range value. The linear method fuzzifies these values to return a floating number that can be defuzzified to determine the new behaviour of the AI.

    The AI should pursue the food until the player is detected to have come close, at which point the AI will begin to become cautious and will move slower, if the player gets even closer, then the AI will avoid the player. In the pursuing phase the AI is shown to be a green color, but will be yellow in the cautious phase, and red in the retreating phase.