

Exercise: Course questions

- 1) Can a fuzzy membership be True and False at the same time?
- 2) Consider the following real variables from everyday life:
 - Speed measured in meters per second.
 - A TV show measured in how much you are interested watching it.
 - A traffic light measured in what color is on.

In each case, suggest a fuzzy variable corresponding to these real variables.
For which of these three variables the use of a fuzzy variable is not necessary? Why?

Correction

1) Yes. In fact, a fuzzy variable is always True and False at the same time, but with different degrees of membership (confidence).

Moreover, if M is the membership of a variable in True, then its membership in False will be $1-M$.

2) I suggest the following fuzzy variables (you may come up with a bit different):

Speed : {Slow, Fast }

A TV show { Boring, OK, Fascinating }

A traffic light : {Red, Yellow, Green }

It is not necessary to use the fuzzy representation for a traffic light. The reason for that is that we only have to consider when it is either Red, Yellow or Green, and we do not need to consider intermediate states. Furthermore, it is not often when you see, say, Red and Green at the same time. Thus, fuzzy variables are necessary when we really have to consider “blurred” states.