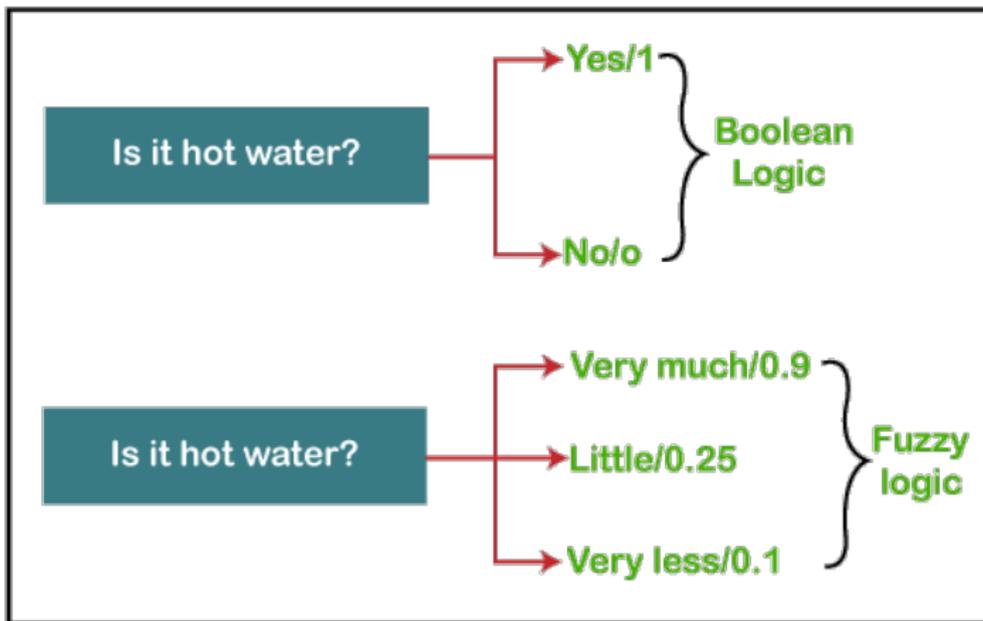


**What is...fuzzy logic?**

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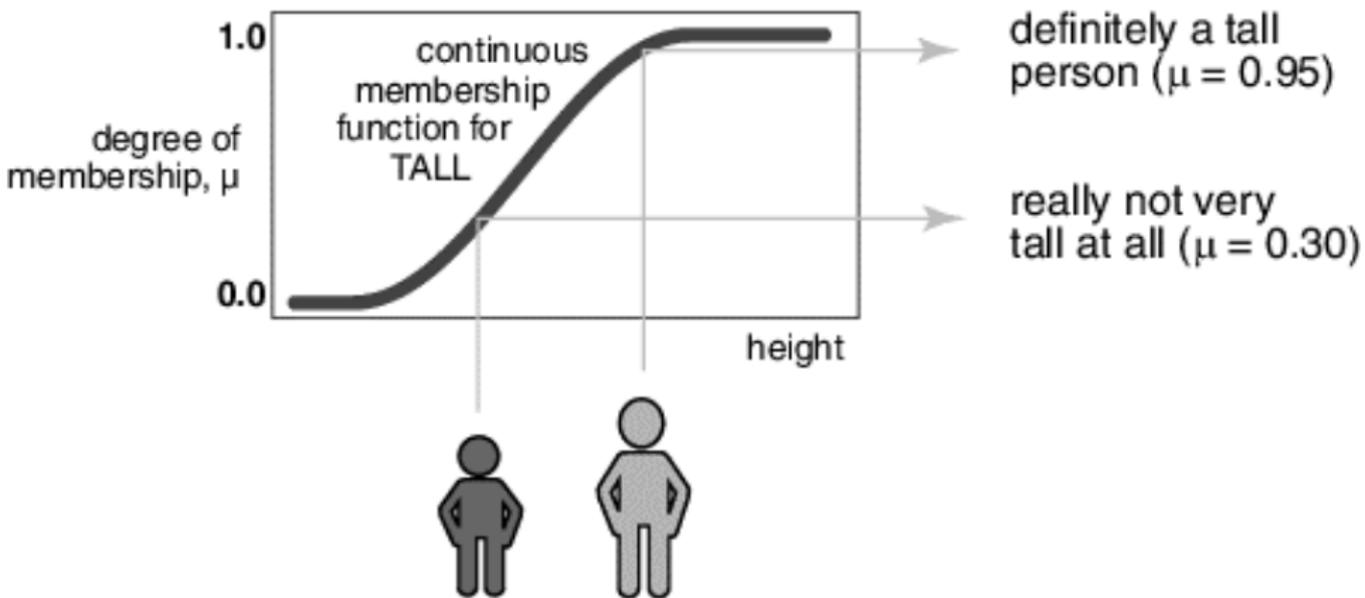
Or: This video is 90% crap

## Life is not black-and-white



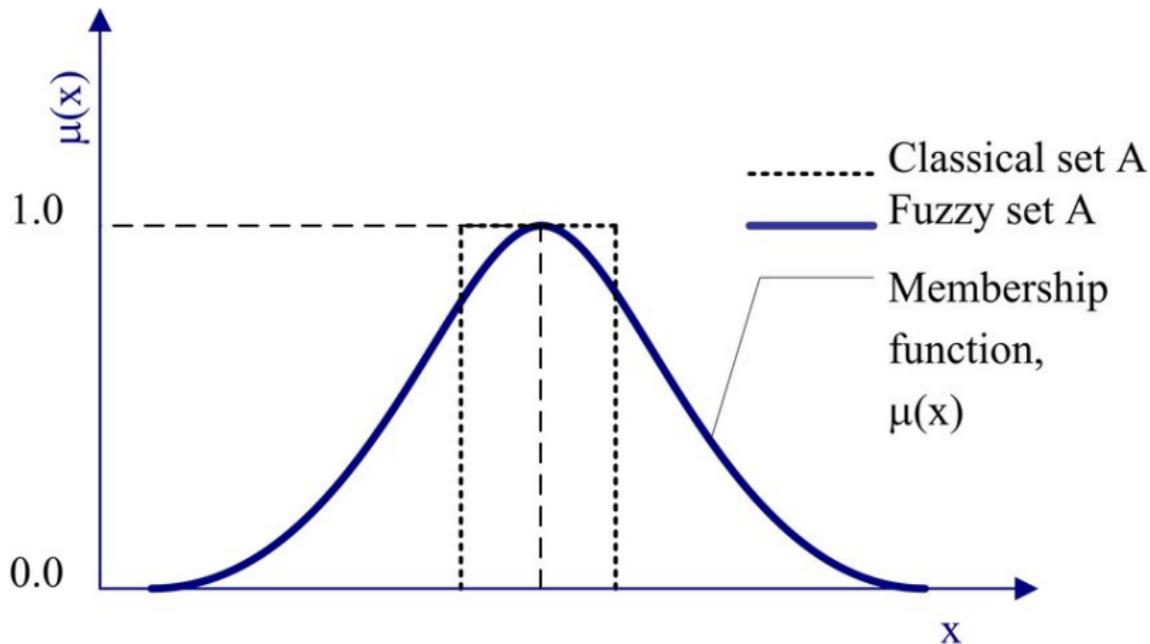
- ▶ Mathematics is based on Boolean logic
- ▶ Life is not based on Boolean logic
- ▶ Idea Logic/mathematics based on "the logic of life"

## Fuzzy sets



- ▶ A **fuzzy set** is a collection of elements which exist between (including) 0 and 1
- ▶ More precisely, there is a **membership function  $\mu: X \rightarrow [0, 1]$**
- ▶  $\mu(x) = 0 =$  out,  $\mu(x) = 1 =$  in,  $0 < \mu(x) < 1 =$  partially in  **$\mu =$  probability**

## Classical and fuzzy



► Classical sets are like **box functions**

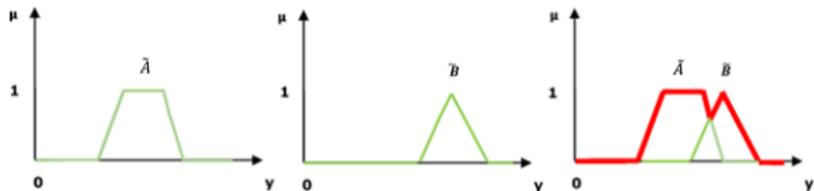
► Fuzzy sets are like **any function**

# Enter, the “theorem”

A **fuzzy set** is a pair  $(X, \mu)$  of a set  $X$  and a function  $\mu: X \rightarrow [0, 1]$

“Theorem” Fuzzy set theory works

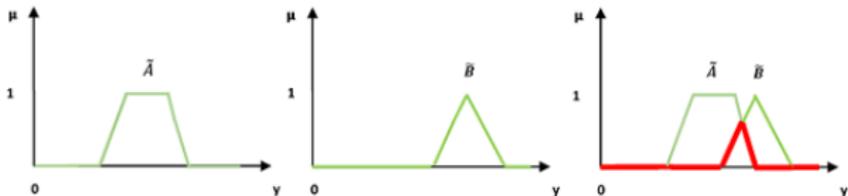
## ► Fuzzy union and intersection



Fuzzy set  $\tilde{A}$

Fuzzy set  $\tilde{B}$

Union of two Fuzzy sets



Fuzzy set  $\tilde{A}$

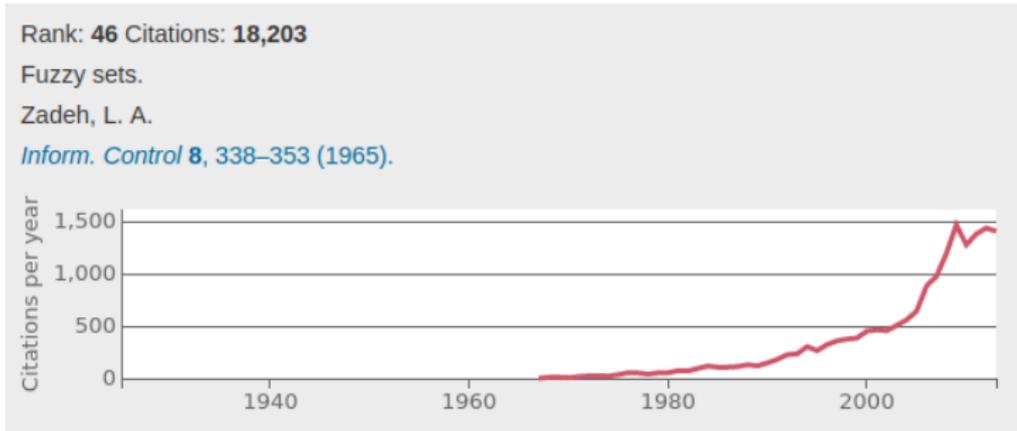
Fuzzy set  $\tilde{B}$

Intersection of two Fuzzy sets

## ► Etc.

## The most cited papers of all time! Well...

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**Fuzzy sets** is the most cited math paper of all time  
(According to the 2014 study linked in the description)

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- ▶ I just told you that life is not Boolean
- ▶ Life is also not linearly ordered
- ▶ So such list are of course should be taken with a pinch of salt ;-)

**Thank you for your attention!**

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I hope that was of some help.