

Dmitry Kiryanov & Elena Kiryanova

FUZZY METHODS OF ACCOUNTING WORKING SCHEDULES IN IT

Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia
Computational Ecology Lab: www.keldysh.ru/pages/forest

Fuzzy planning and accounting work

plan:

- Some recent trends in IT industry (freelancer work etc)
- Introduction to fuzzy approach
- “Work-Rest” scheme versus “office” work
- *Fuzzy mathematics: quantification of the fuzzy schedule*
- *Discussion of the work efficiency and membership values*
- About possible practical algorithms
- About manners of interpreting polls results
- *Example: “background training”*
- *On the “fuzzy” approach to analysis “office” scheme*
- *Invitation to simple poll*

Fuzzy sets

Membership
function $\mu(H)$



$\mu=0.01$

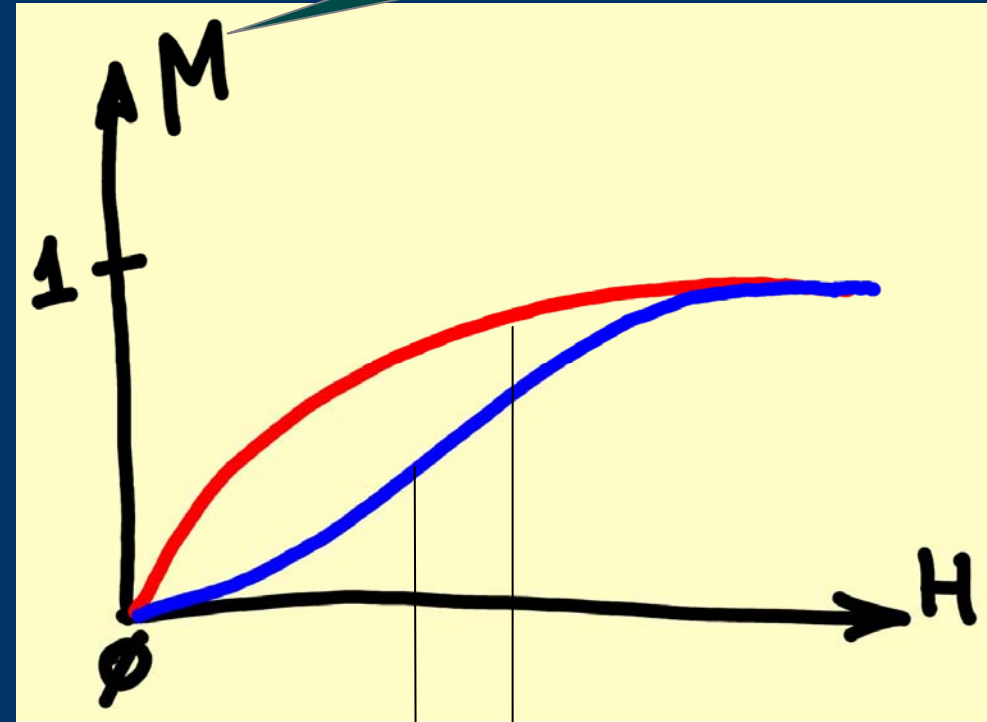


$\mu=0.4$



$\mu=0.9$

Example of Fuzzy Set: tall people



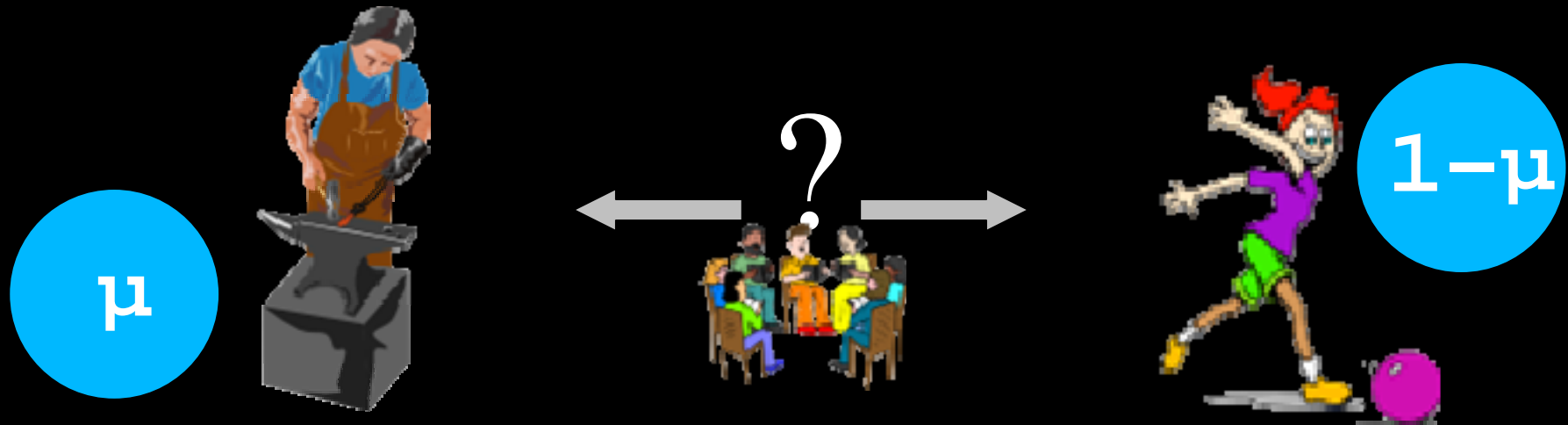
The elements of fuzzy sets are described by *membership value* μ .

Poll among
focus group 1

Poll among
focus group 2

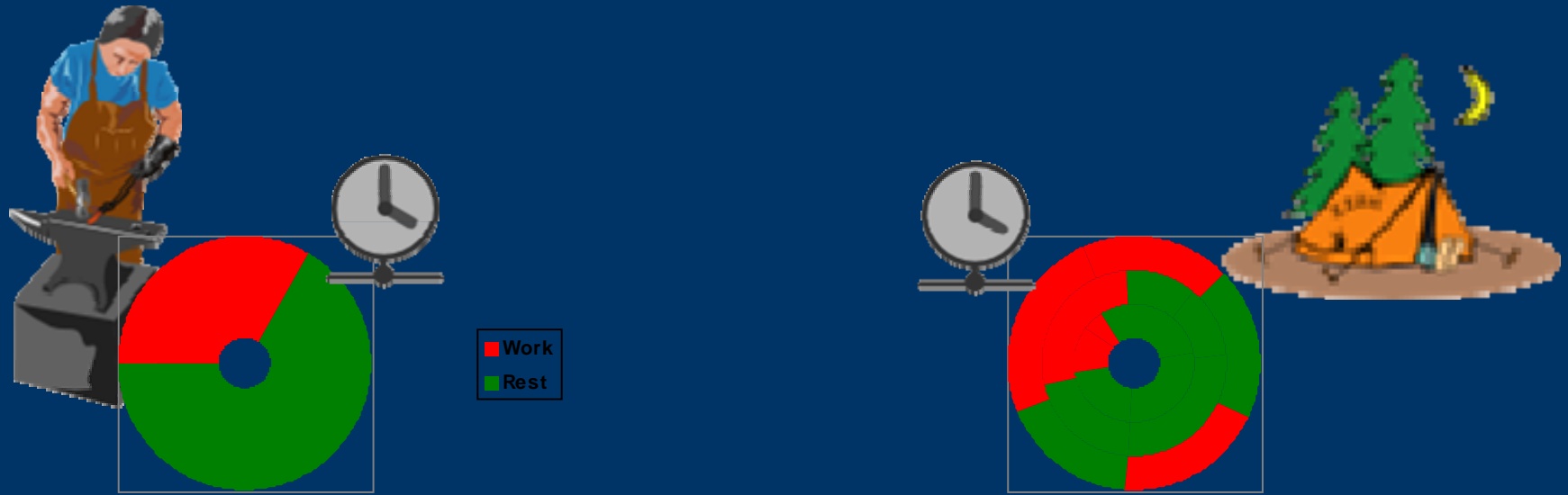
Fuzzy approach in planning work

"Fuzzy schedule" implies being in state of "working" and "not working" simultaneously.



The proportions of "working" and "not working" states are described by membership values μ and $1-\mu$ respectively.

“Work-Rest” scheme versus “office” work



“office” work

“fuzzy” work

Circles on diagrams illustrate 24-hour distribution of membership values

Quantification of the fuzzy schedule

“Office” scheme:

$$\text{product of } k\text{-hour work} = k \cdot \eta \quad (1)$$

“Fuzzy” scheme:

$$\text{product} = \sum k_i \cdot \eta_i \quad (2)$$

k_i — working time for some (i -th) type of work

η_i — corresponding mean efficiency

μ_i — fuzzy membership value

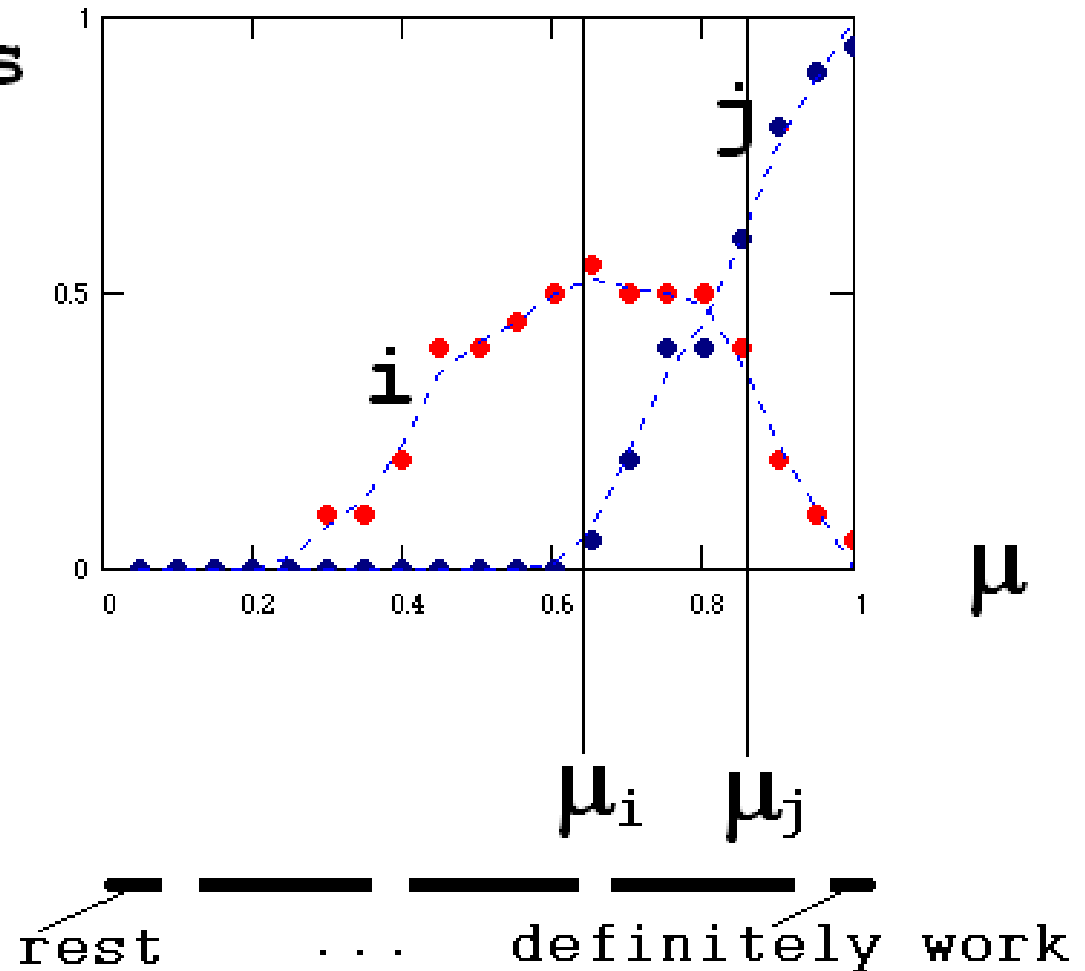
$$\sum k_i \cdot \mu_i \sim k \quad (3)$$

Algorithm of developing schedule

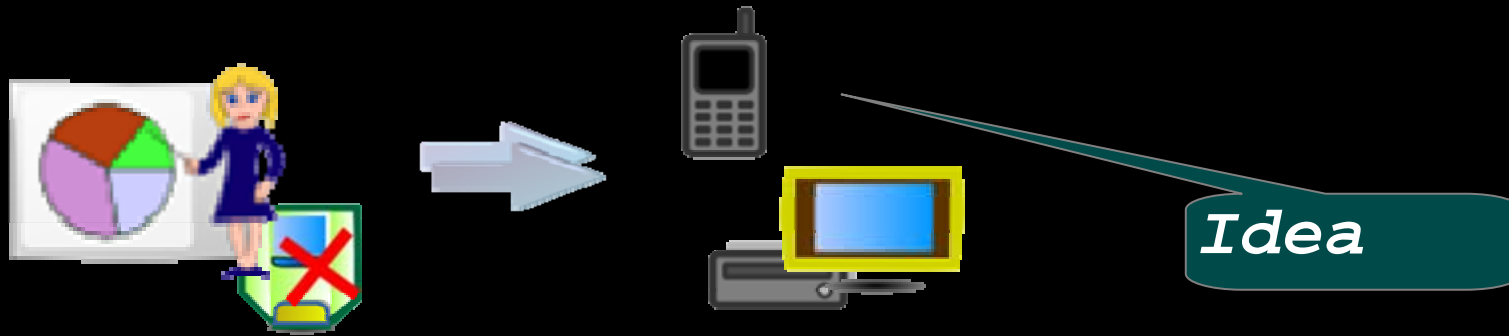
- ✓Evolving new types of activity based on "background" working".
 - ✓Exposure of membership values μ_i for each of type of activity.
 - ✓Estimating relative efficiency values η_i .
 - ✓Evolving working schedule.:
 - ✓Analyzing working schedule..
-
-

Estimating membership values

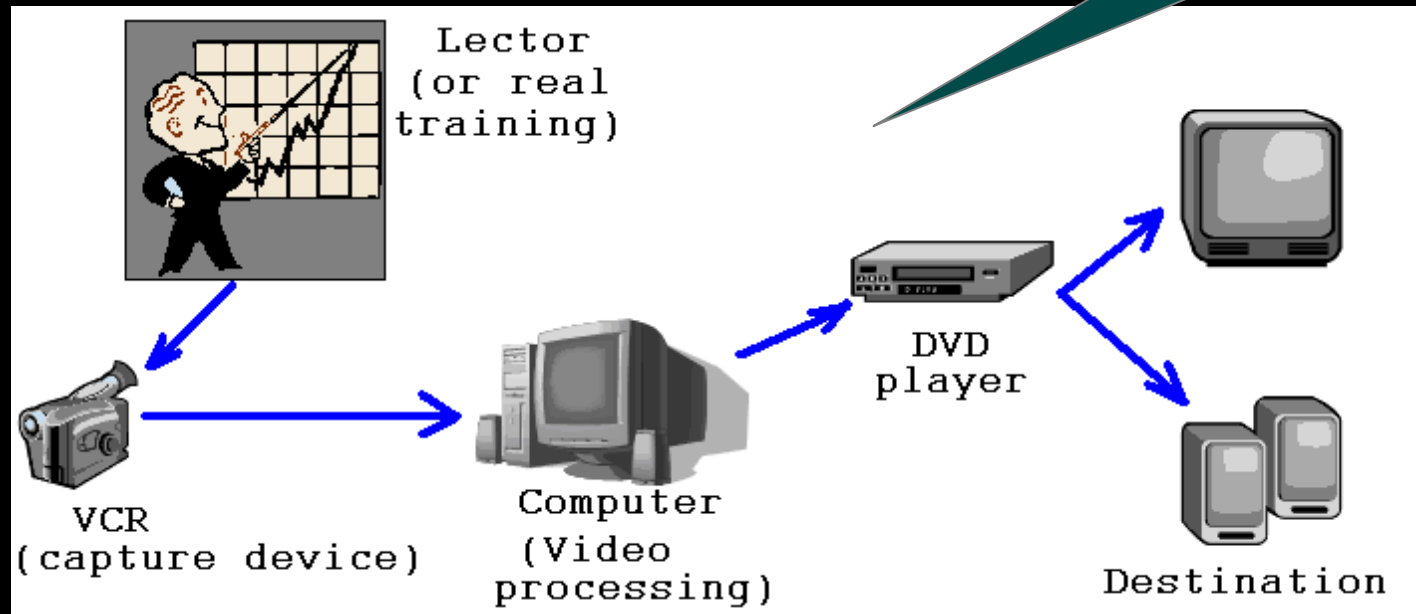
% of answers



Example: background training

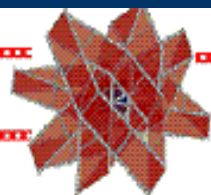


Technology



Contacts and additional information

P O L Y B O O K



M U L T I M E D I A

www.polybook.ru

info@polybook.ru

