Modern intelligent IT

Lab 4 (15.04.2016)

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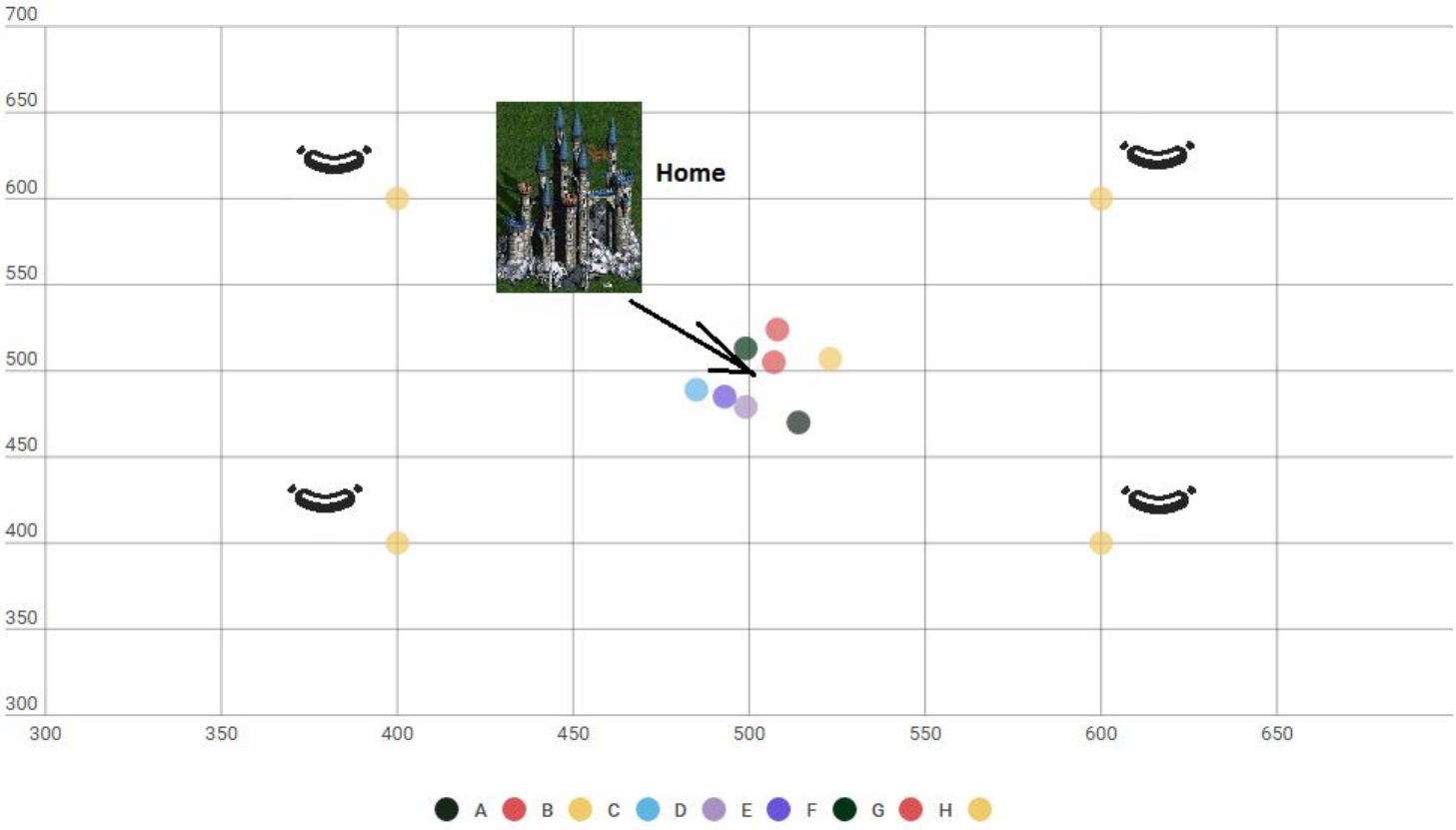
Fitness Sharing Algorithm

Fitness sharing for Lucky dog

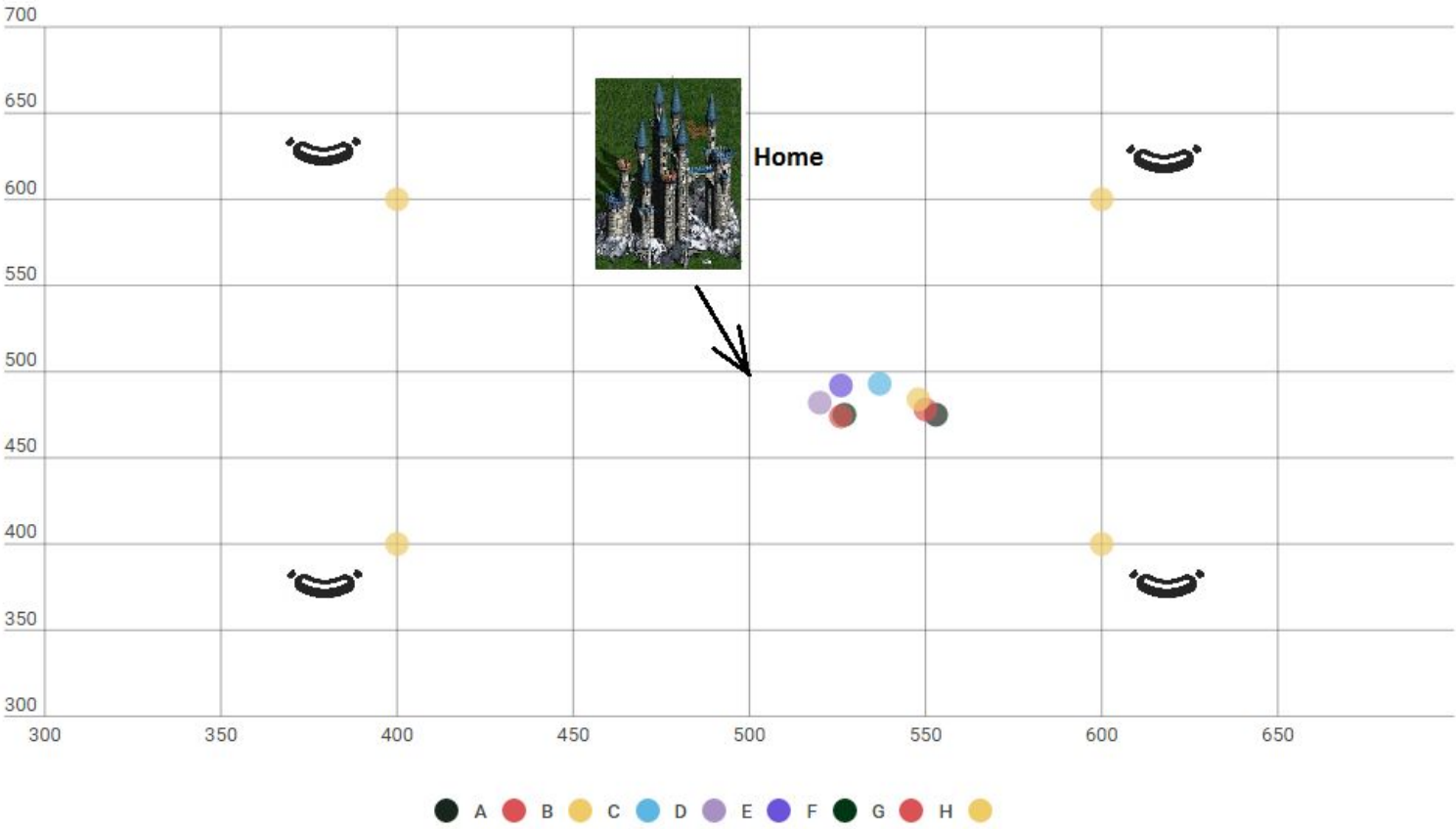
We have 8 dogs, which try to reach sausages.

1st generation



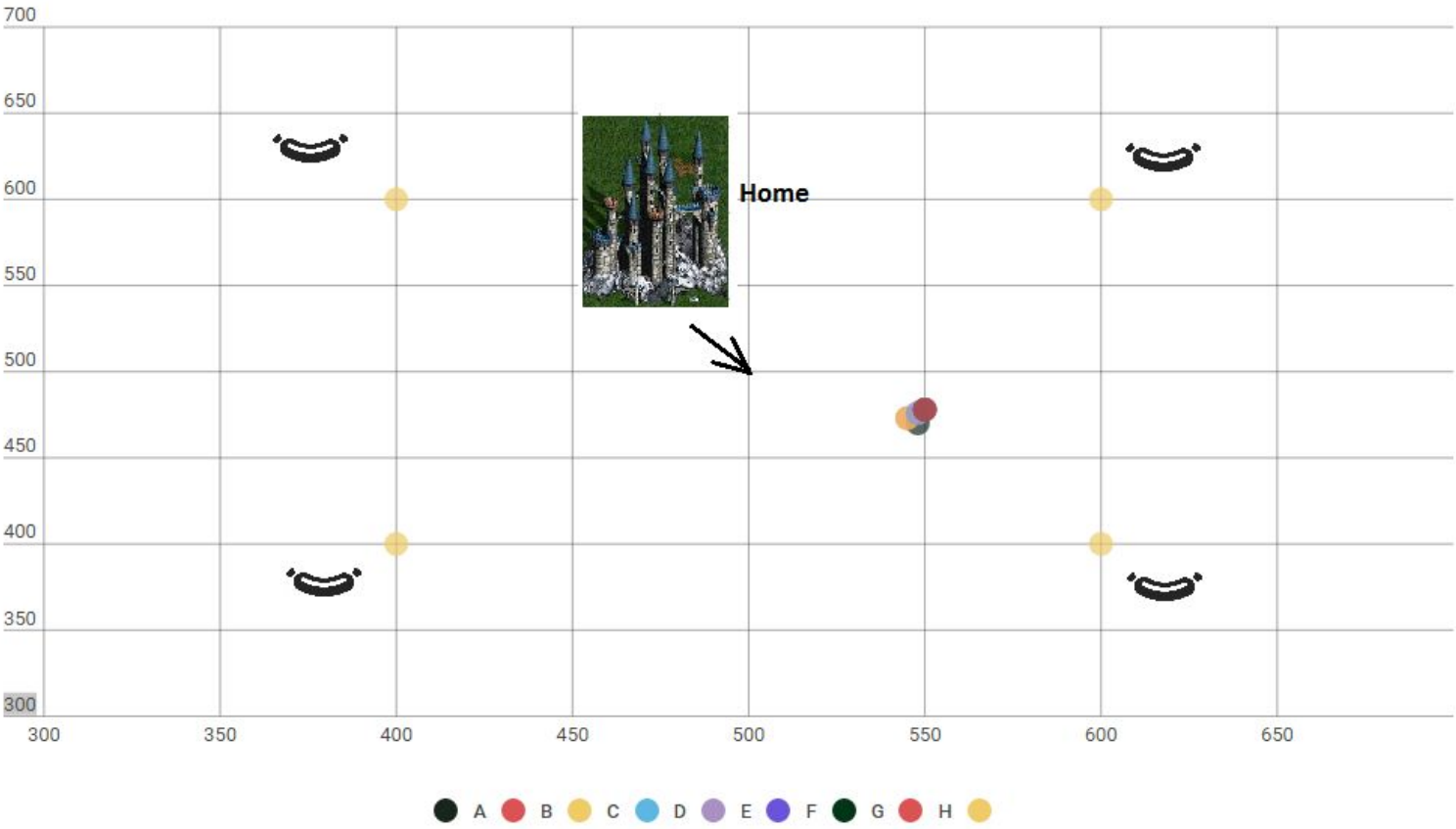
	Original Fitness	Sharing Fitness
A	44	44
B	32	32
C	30	30
D	26	26
E	22	22
F	22	22
G	14	14
H	12	12

Intermediate



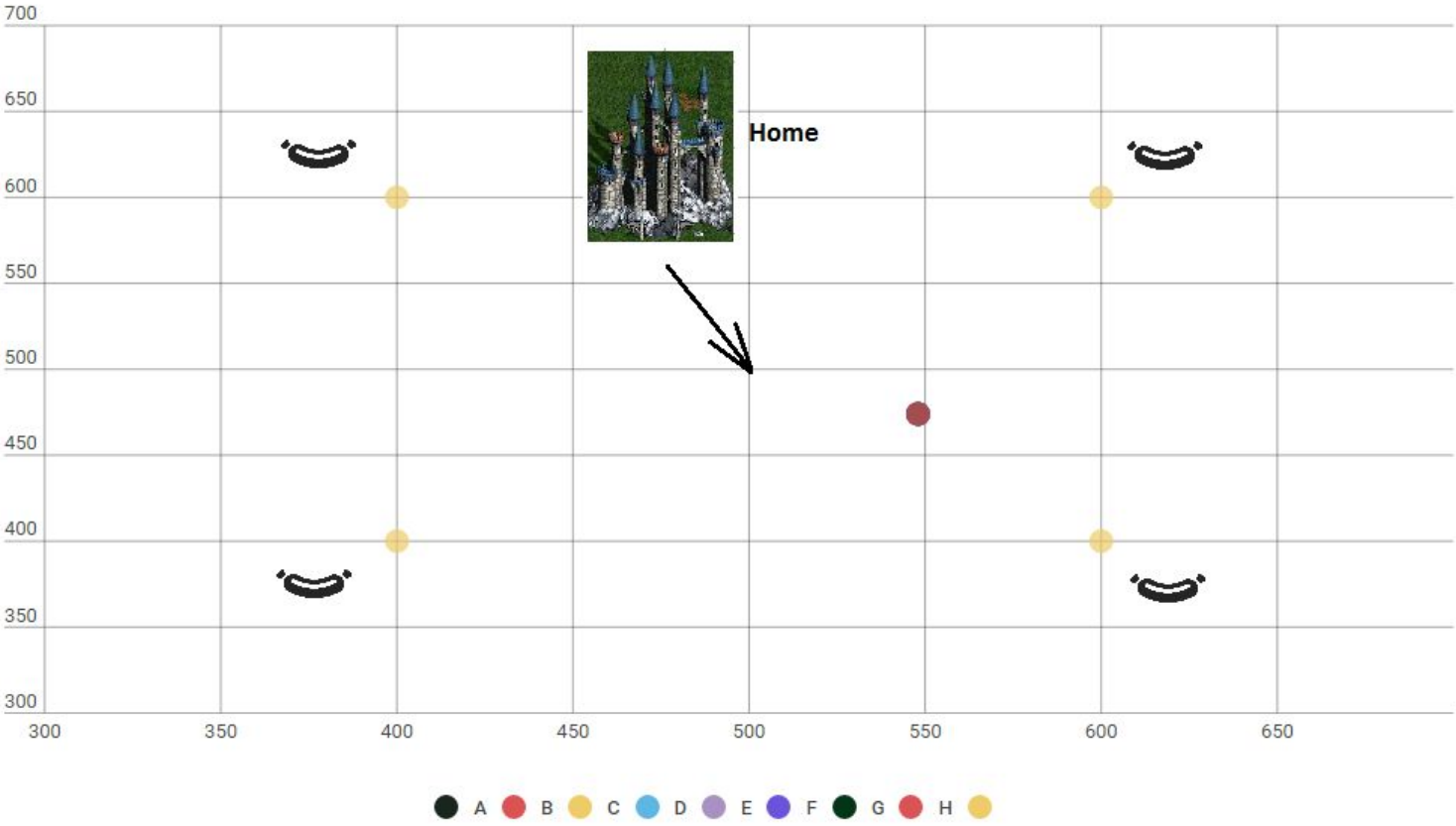
	Original Fitness	Sharing Fitness
A	78	78
B	72	72
C	64	64
D	44	44
E	38	38
F	34	34
G	52	32.5
H	52	32.5

Intermediate



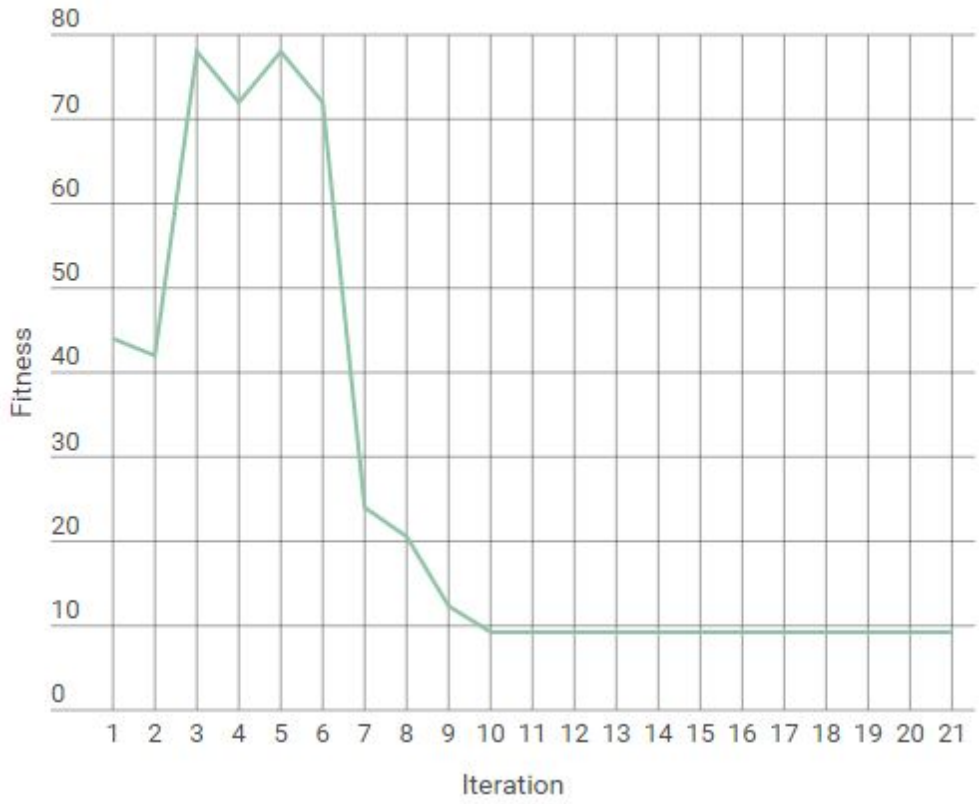
	Original Fitness	Sharing Fitness
A	78	78
B	72	36
C	72	36
D	72	27.6923
E	72	27.6923
F	72	21.1765
G	72	21.1765
H	72	21.1765

Last generation



	Original Fitness	Sharing Fitness
A	74	9.25
B	74	9.25
C	74	9.25
D	74	9.25
E	74	9.25
F	74	9.25
G	74	9.25
H	74	9.25

Fitness vs Generation



Crowding Alghoritm

Algorithm 1 *1. Choose two parents, p_1 and p_2, at random.*

2. Produce two children, c_1' and c_2'.

4. Replace parent with child as follows:

- *IF* $d(p_1, c_1) + d(p_2, c_2) > d(p_1, c_2) + d(p_2, c_1)$
  - *IF* $f(c_1) > f(p_1)$ *THEN replace* p_1 *with* c_1
  - *IF* $f(c_2) > f(p_2)$ *THEN replace* p_2 *with* c_2
- *ELSE*
  - *IF* $f(c_2) > f(p_1)$ *THEN replace* p_1 *with* c_2
  - *IF* $f(c_1) > f(p_2)$ *THEN replace* p_2 *with* c_1

Results: