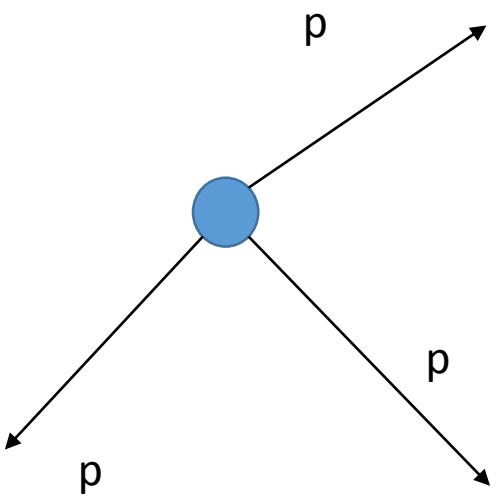
# Correlated Walk

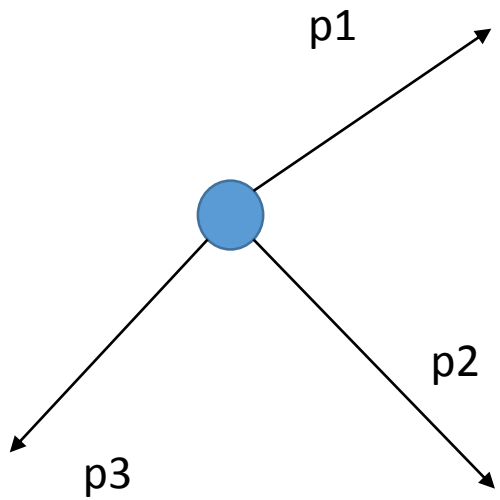
Math behind at a correlated walk simulator

# Classic RW Vs Correlated RW




3p=1

VS




p1+p2+p3=1

# How do we correlate agents?

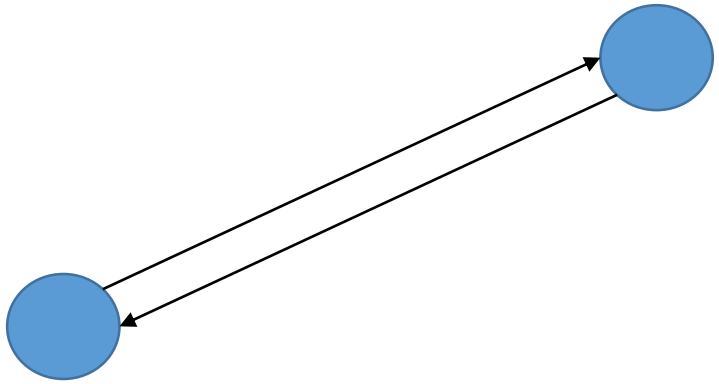
# How do we correlate agents?

Simply by mathematical functions !!

$$\Delta X([\sum f(||x_n - x_i||)])$$

[]=Mathematical relation

# One simple example

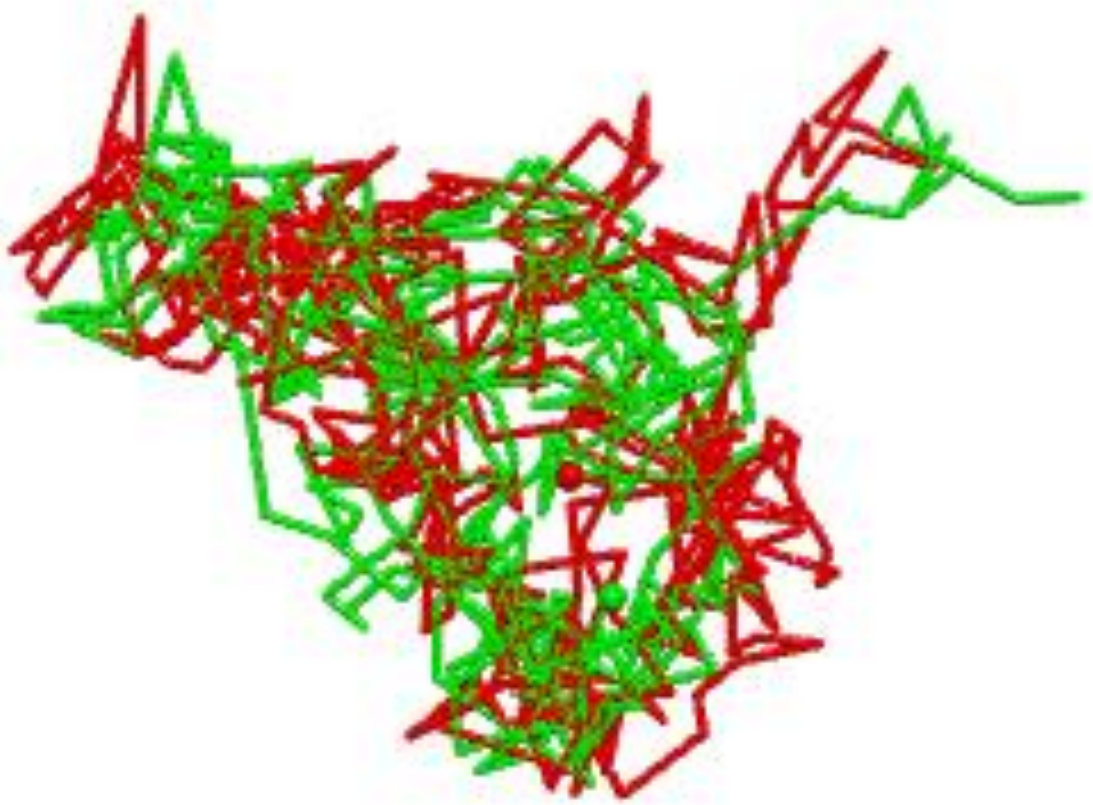


$$\Delta X([\sum f(||x_n - x_i||)])$$

$$f = \exp(-w_1(x_1 - x_0)^2 - w_2(y_1 - y_0)^2)$$

[]=Prob(f)

# One simple example



# The bee and the Queen

$$\Delta X([\sum f(||x_n - x_i||)])$$

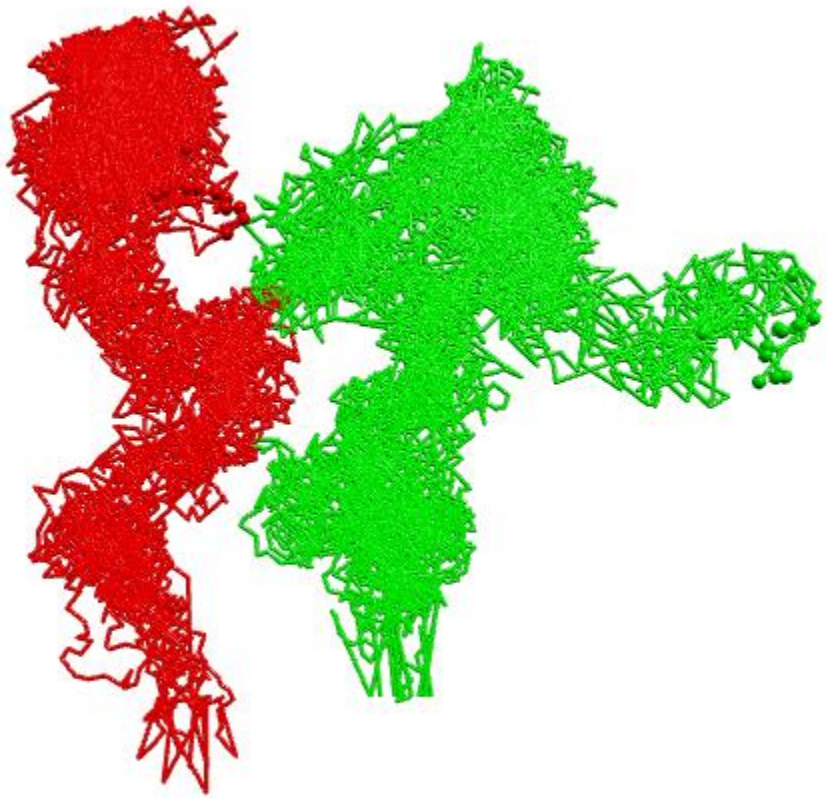
$$f = \exp(-w_1(x_1 - x_0)^2 - w_2(y_1 - y_0)^2)$$

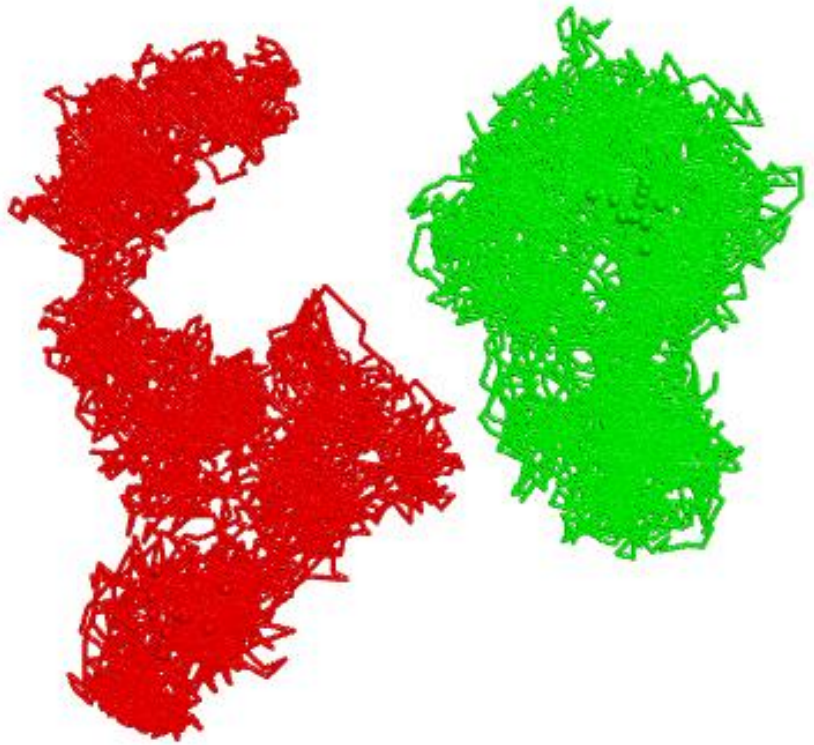
X0=Worker bee position

X1=Queen bee position

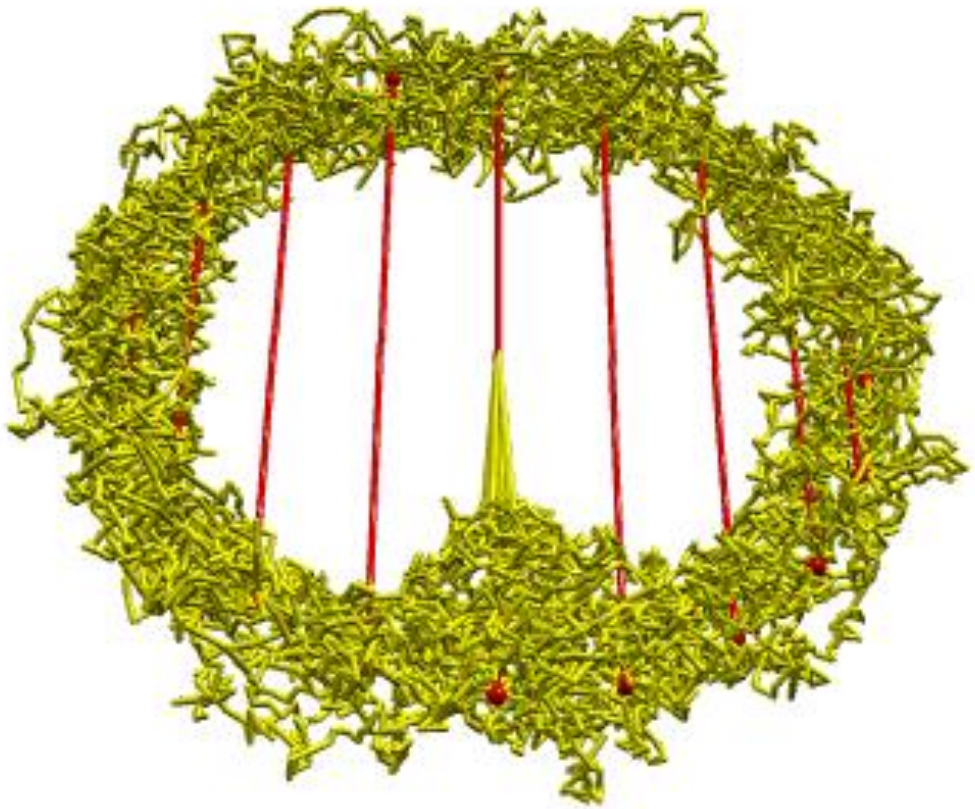
[]=Prob(f)

# Results with two bee swarms





# Results with the bee swarms and the flower crown

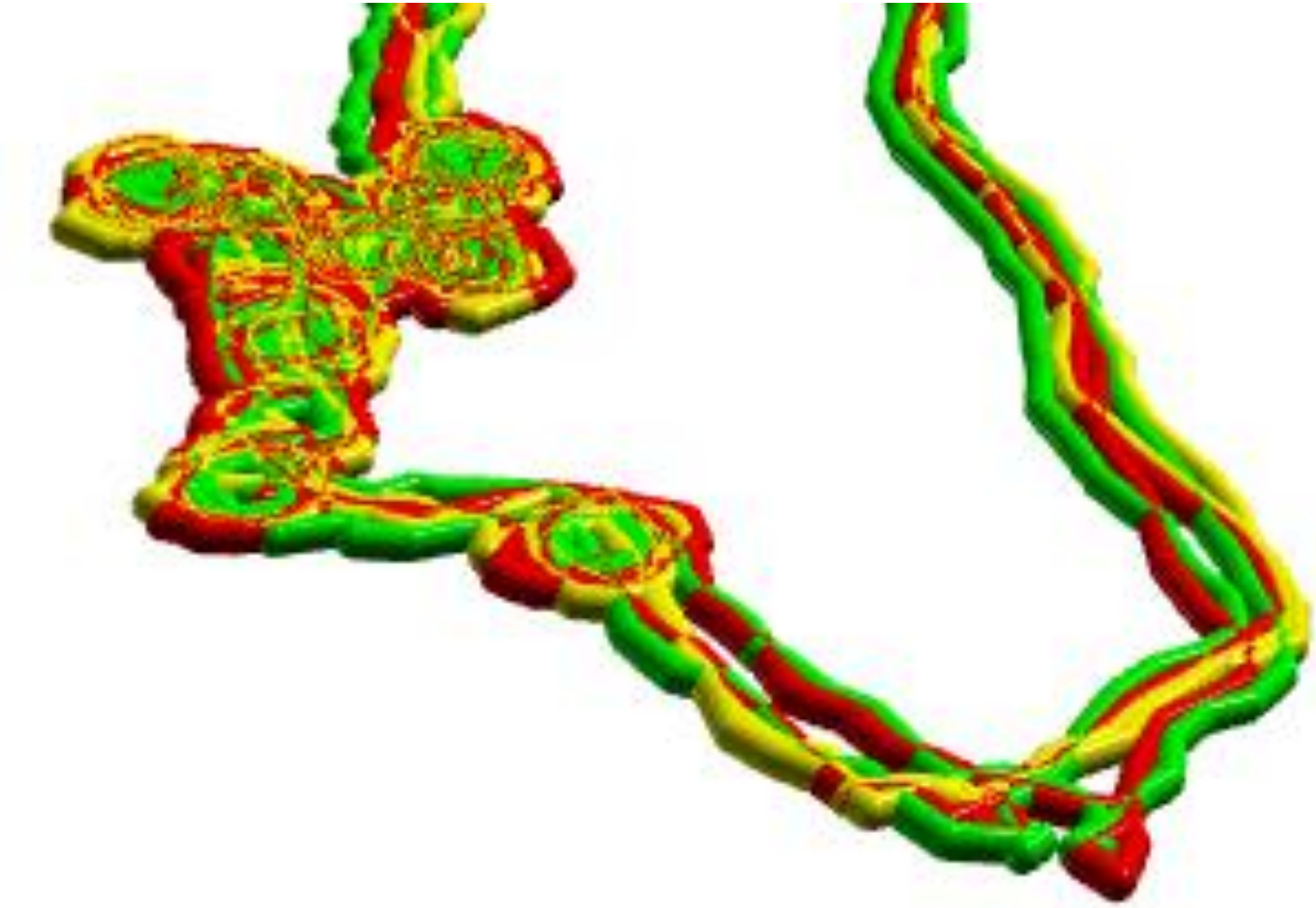


# Others more complicated structures

$$\Delta X([\sum f(||x_n - x_i||)])$$

[]=Max{(f)}

# Others more complicated structures



# Others more complicated structures