1
2
3
4
5
6
7
8
h
g
f
e
d
c
b
a

Opponent: Trout Color: White

Sense ---- :

Move e3 : ✓

No capture

Sense c7 :

Move c4 : ✓

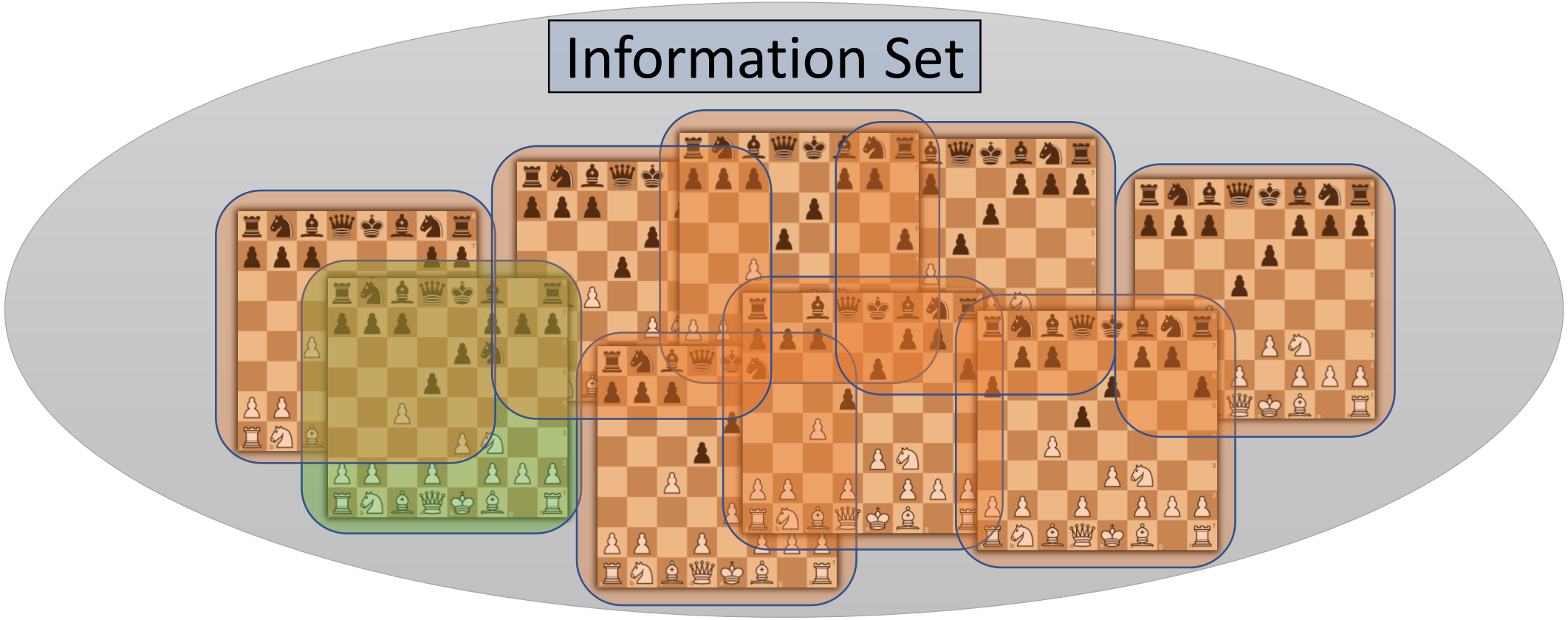
No capture

Sense f5 :

Move Nf3: ✓

No capture

Sense d6 :

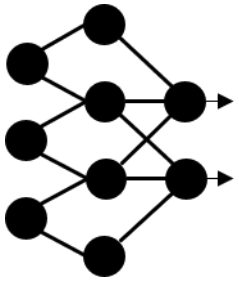


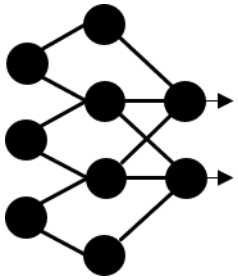
$$Loss = relu(d_p - d_n + 1)$$

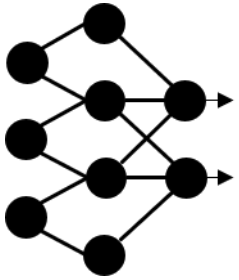
Anchor

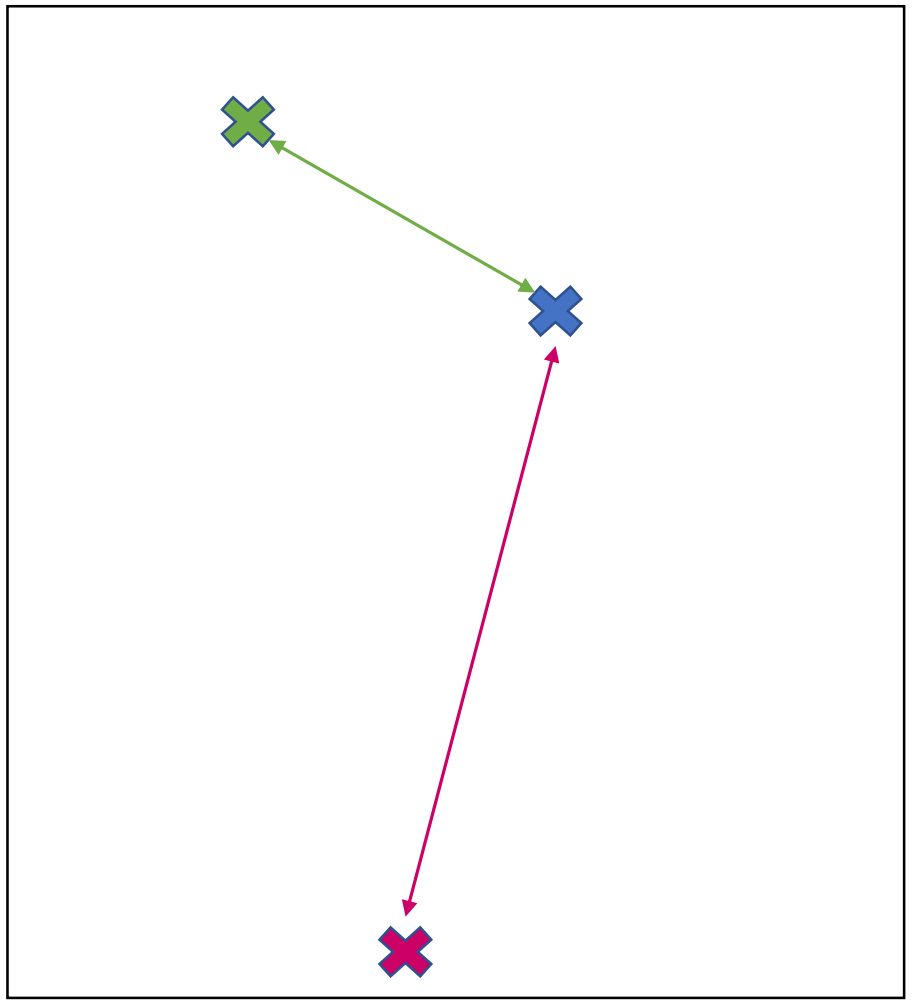
Positive

Negative





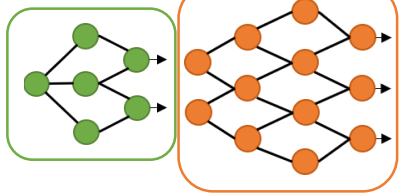


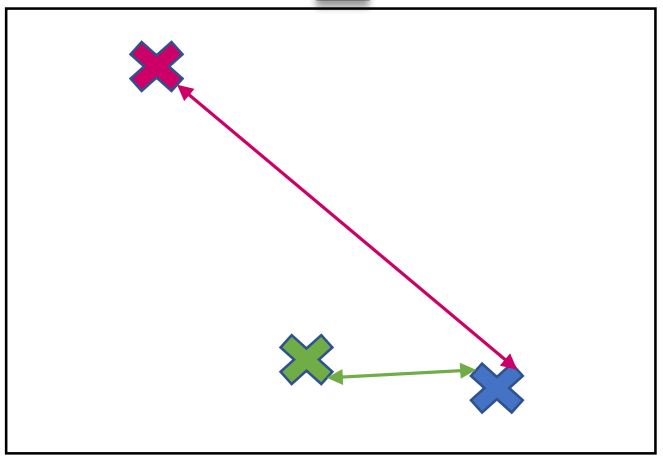


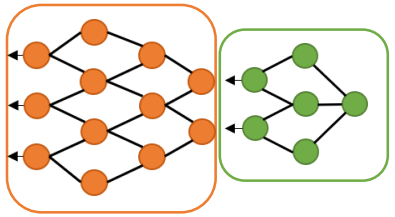
Board encoding
Observation encoding
Siamese Network

$$Loss = relu(d_p - d_n + 1)$$

Set of wrong boards

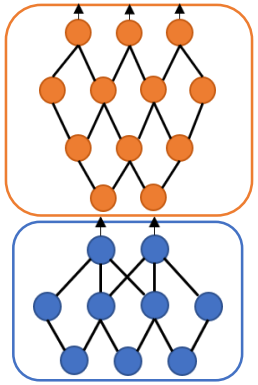






True board

Sample wrong board



Observations

Opponent: Trout Color: White

Sense ---- :
Move e3 : ✓

No capture

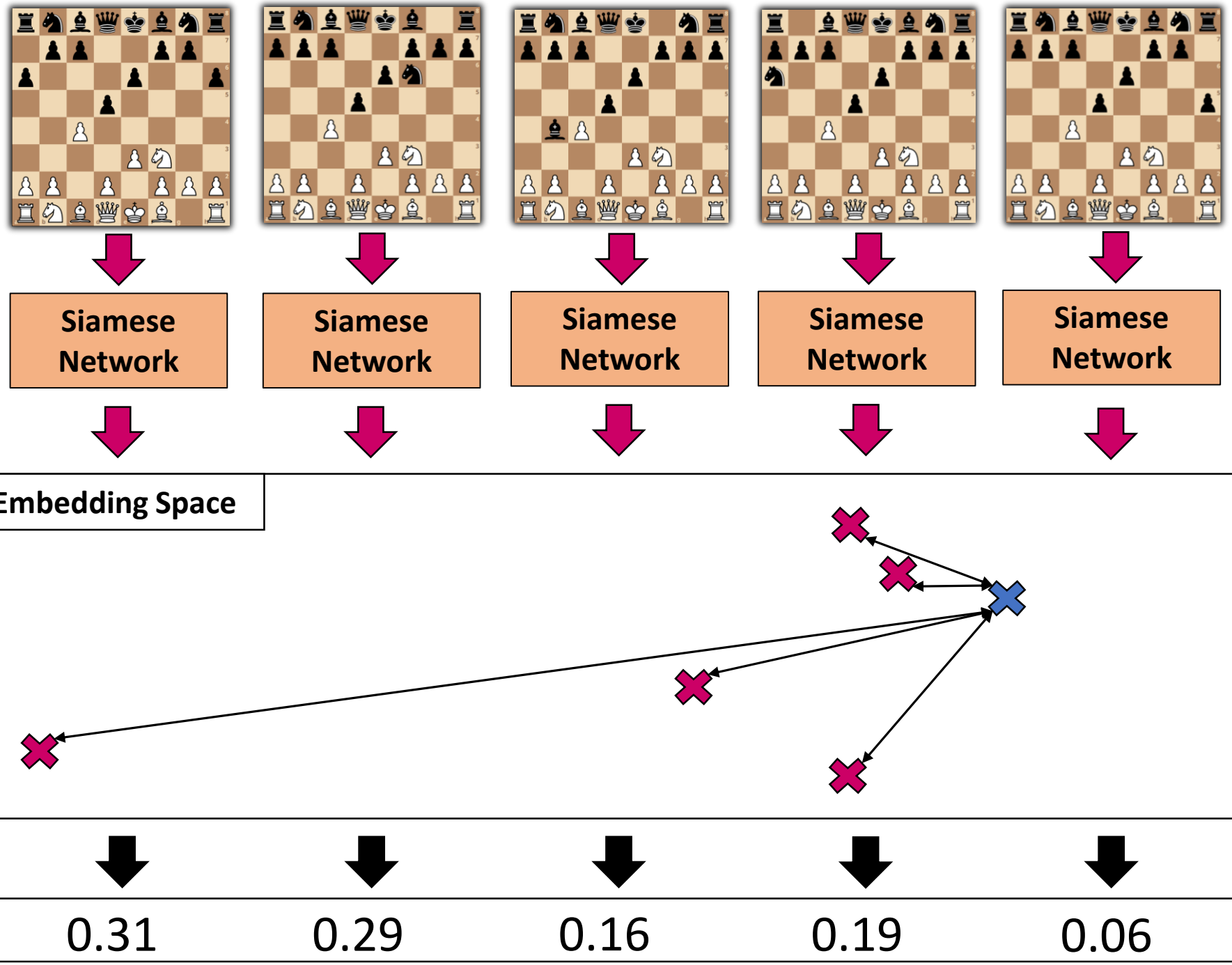
Sense c7 :
Move c4 : ✓

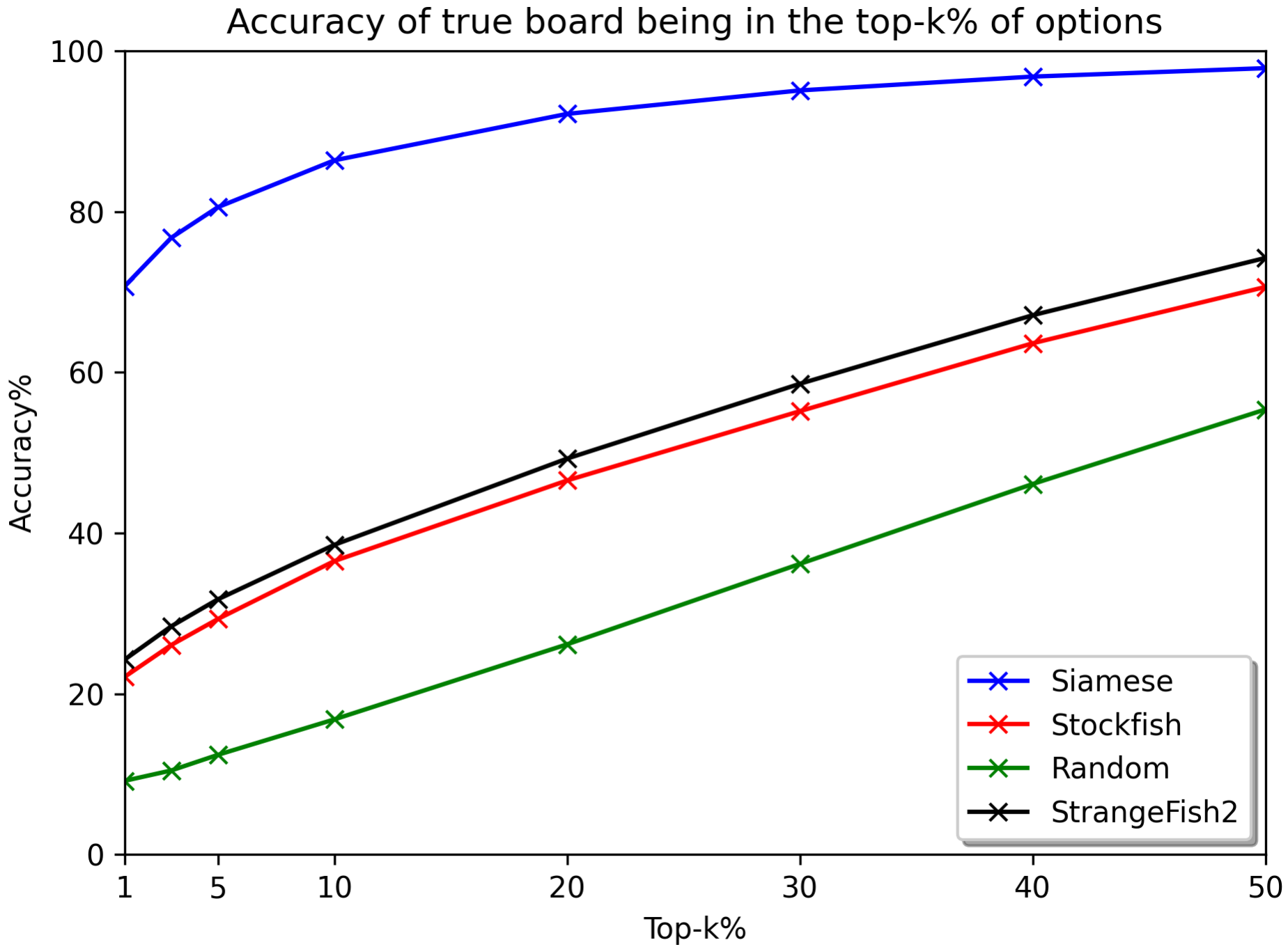
No capture

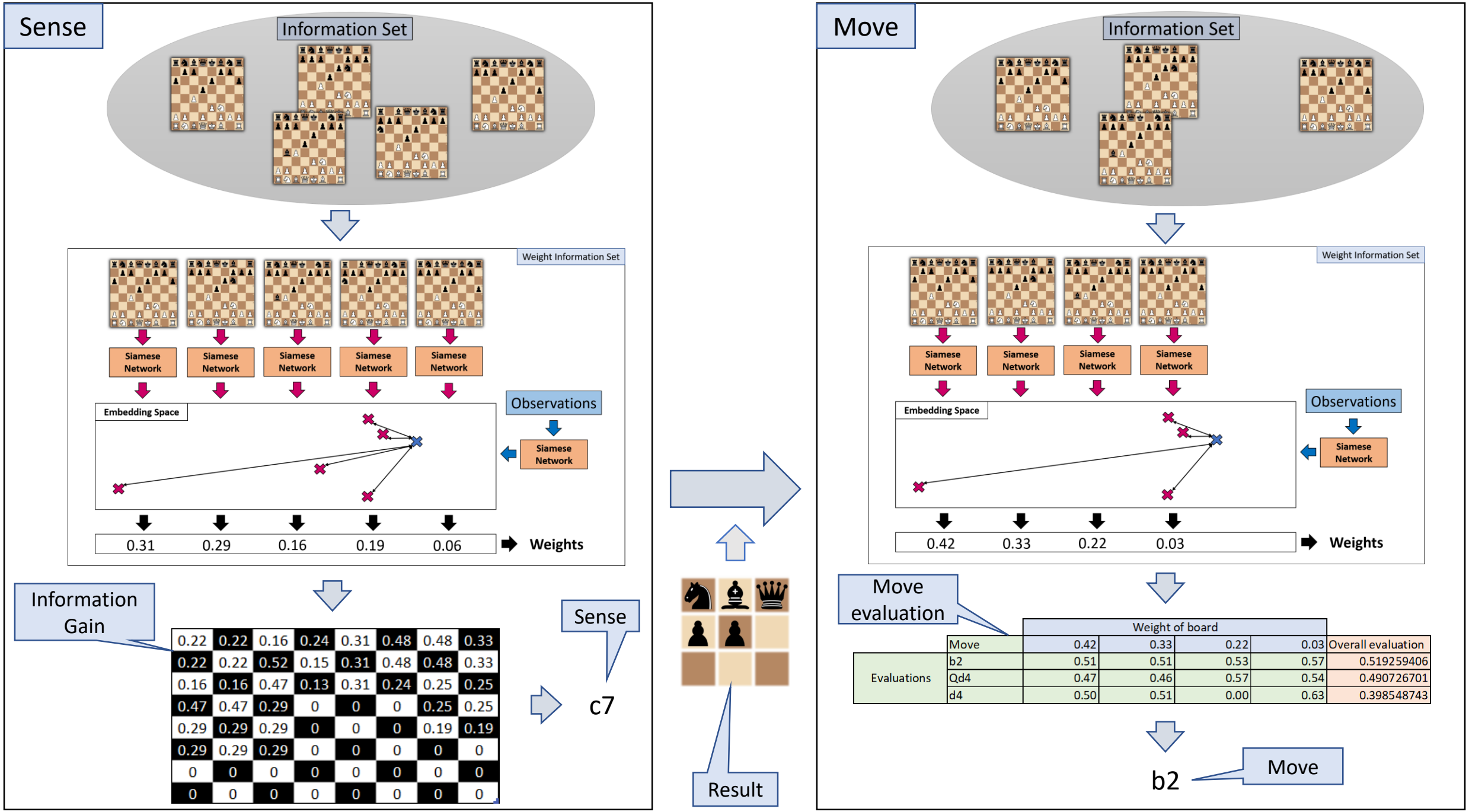
Sense f5 :
Move Nf3: ✓

No capture

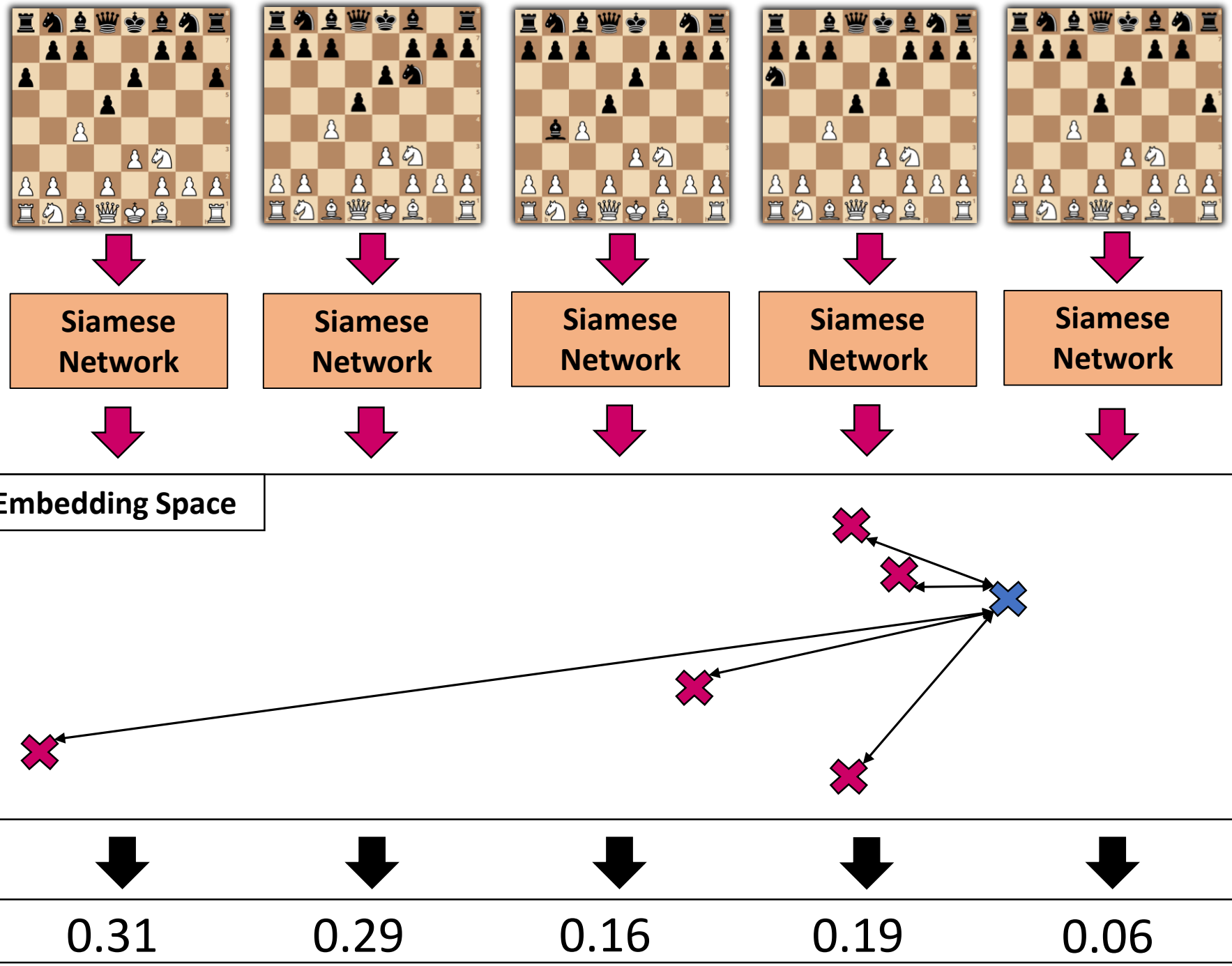
Sense d6 :

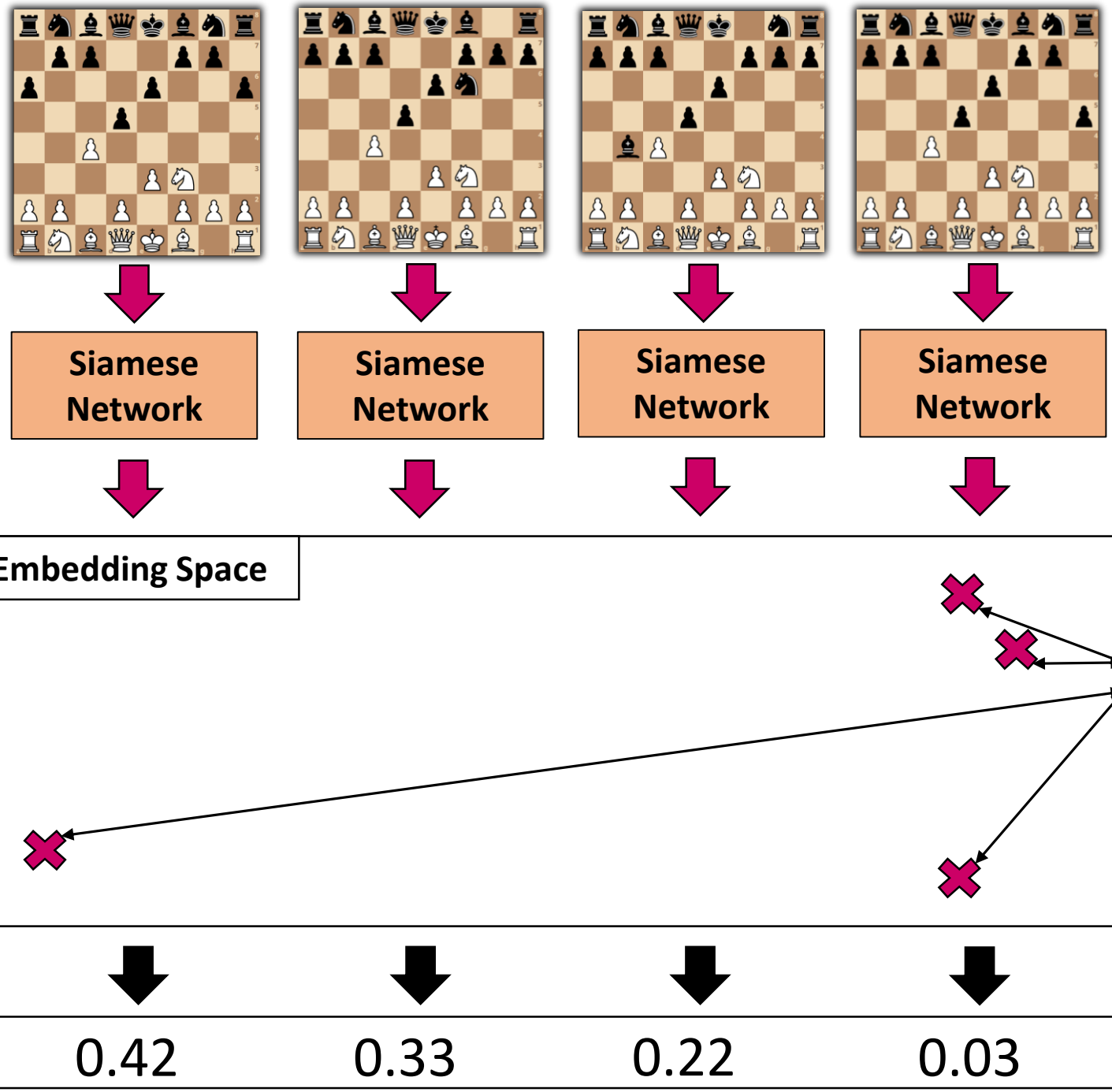

Siamese Network
Siamese Network
Siamese Network
Siamese Network
Siamese Network
Embedding Space
Observations
Siamese Network
0.31
0.29
0.16
0.19
0.06
Weights


Accuracy of true board being in the top-k% of options
Accuracy%
Top-k%
0
20
40
60
80
100
1
5
10
20
30
40
50
Siamese
Stockfish
Random
StrangeFish2


Sense
Information Set
Weight Information Set
Siamese Network
Siamese Network
Siamese Network
Siamese Network
Siamese Network
Embedding Space
Observations
Siamese Network
0.31
0.29
0.16
0.19
0.06
Weights
Information Gain
0.22 0.22 0.16 0.24 0.31 0.48 0.48 0.33
0.22 0.22 0.52 0.15 0.31 0.48 0.48 0.33
0.16 0.16 0.47 0.13 0.31 0.24 0.25 0.25
0.47 0.47 0.29 0 0 0 0.25 0.25
0.29 0.29 0.29 0 0 0 0.19 0.19
0.29 0.29 0.29 0 0 0 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0
Sense
c7
Result
Move
Information Set
Weight Information Set
Siamese Network
Siamese Network
Siamese Network
Siamese Network
Embedding Space
Observations
Siamese Network
0.42
0.33
0.22
0.03
Weights
Move evaluation
Weight of board
Move 0.42 0.33 0.22 0.03 Overall evaluation
Evaluations
b2 0.51 0.51 0.53 0.57 0.519259406
Qd4 0.47 0.46 0.57 0.54 0.490726701
d4 0.50 0.51 0.00 0.63 0.398548743
b2
Move

Sense weighting			Board selection			ELO
Uniform	Stockfish	Siamese	Random	Stockfish	Siamese	
✔			✔			1197
		✔	✔			1253
	✔			✔		1204
		✔		✔		1419
		✔			✔	1534


Weight Information Set
Siamese Network
Siamese Network
Siamese Network
Siamese Network
Siamese Network
Embedding Space
Observations
Siamese Network
0.31
0.29
0.16
0.19
0.06
Weights


Siamese Network
Siamese Network
Siamese Network
Siamese Network
Embedding Space
Observations
Siamese Network
0.42
0.33
0.22
0.03
Weights