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A Bio-Inspired Robot With Visual Perception of Affordancess

Agosto 2014

Affordance driven creature

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Affordance driven creature

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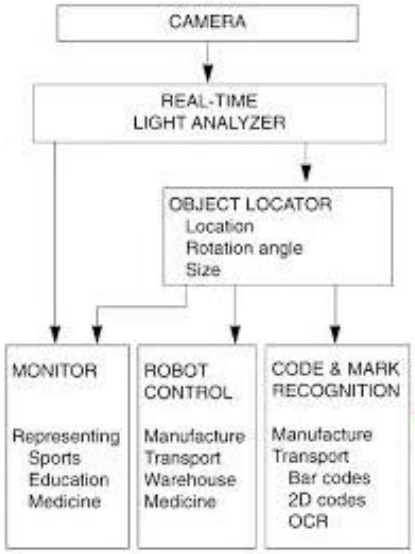

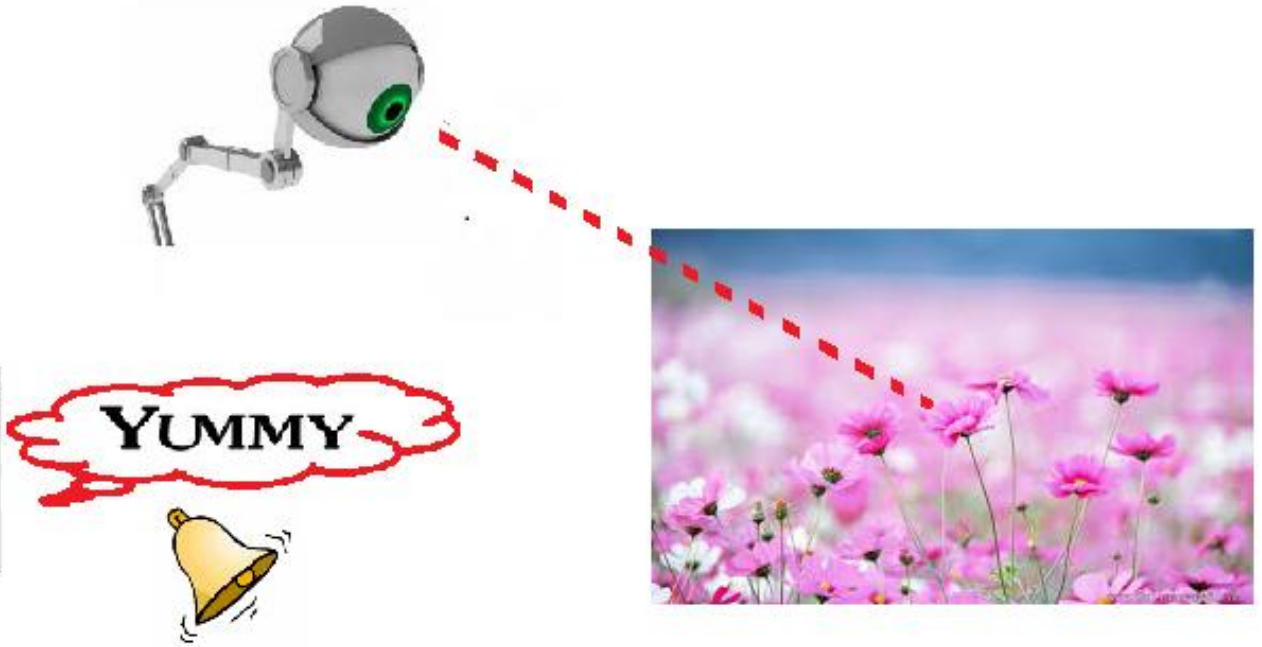

The Insect Brain

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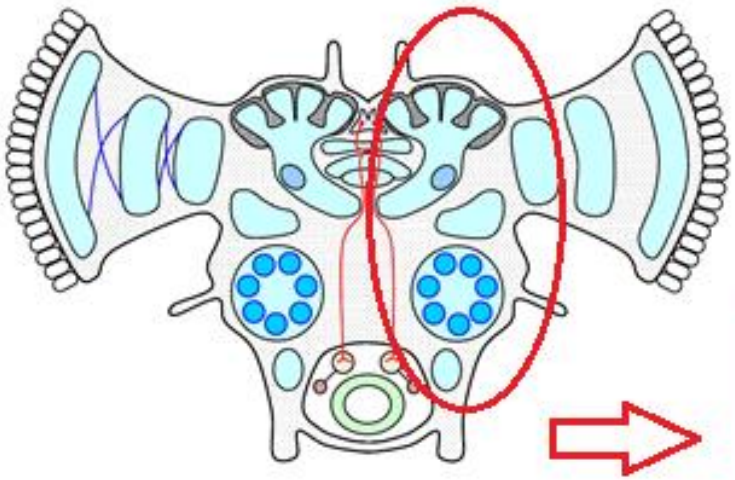
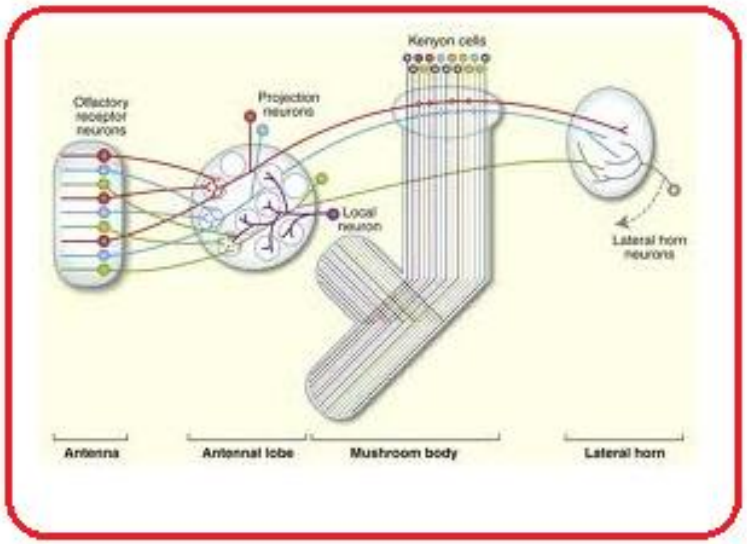


Olfactory system



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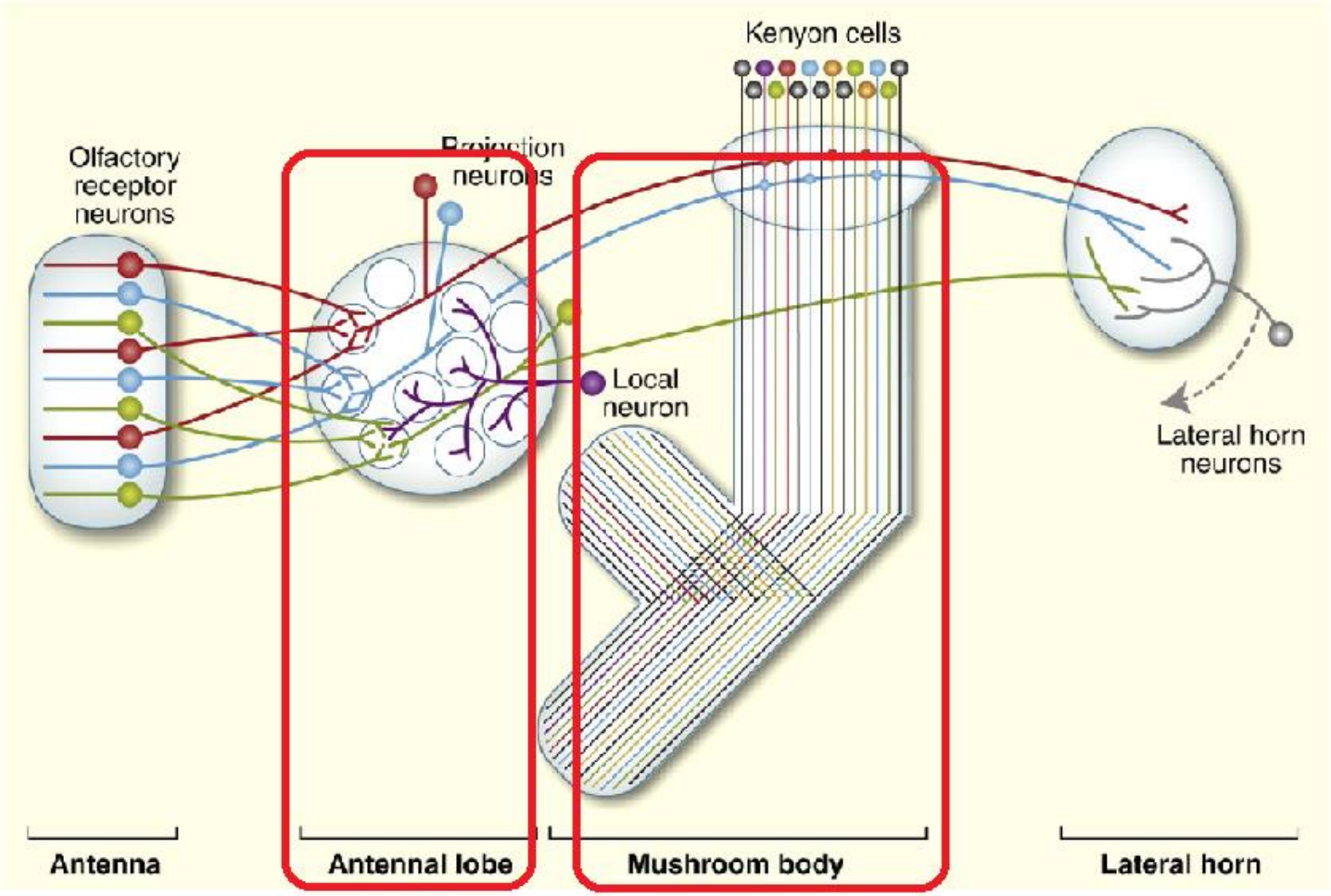

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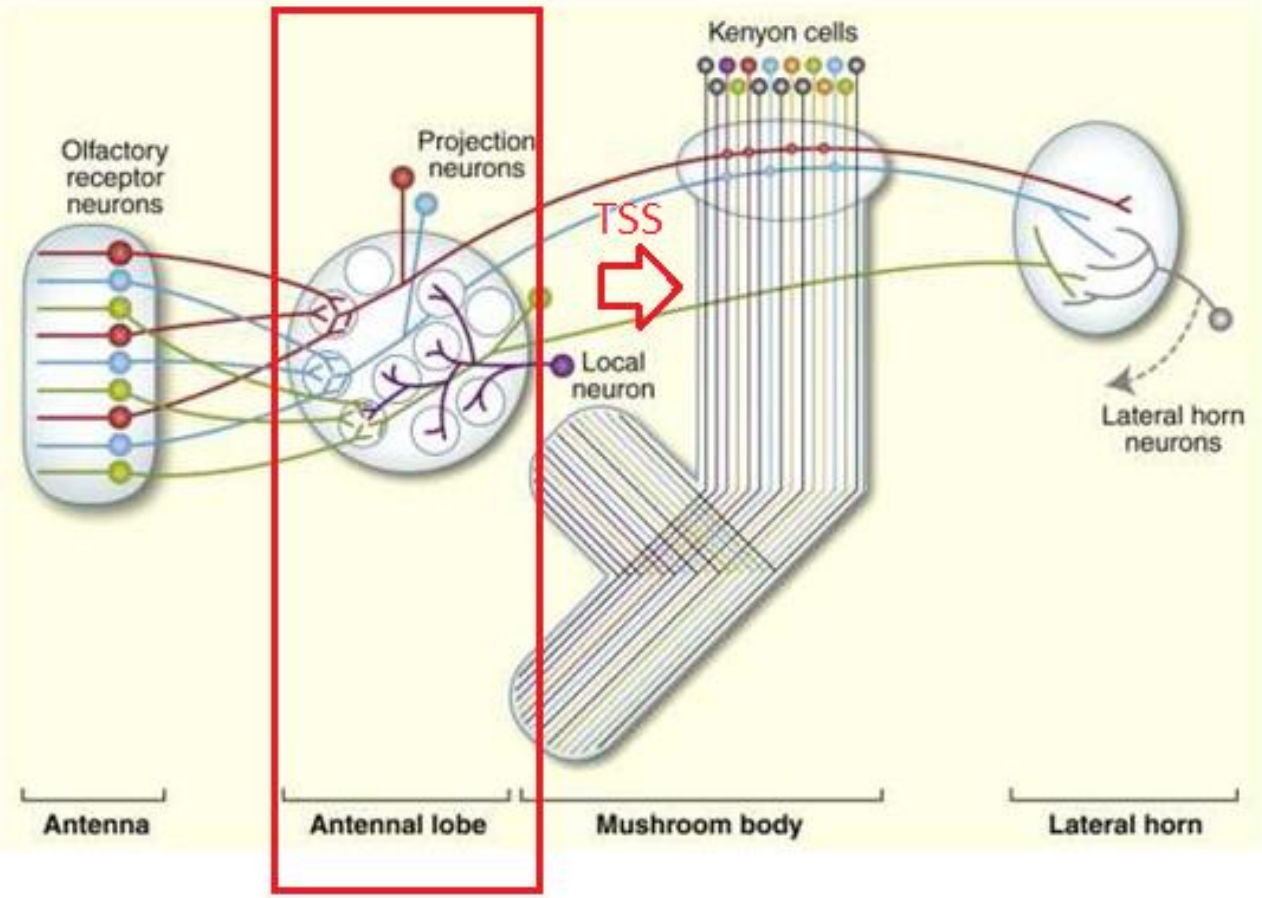

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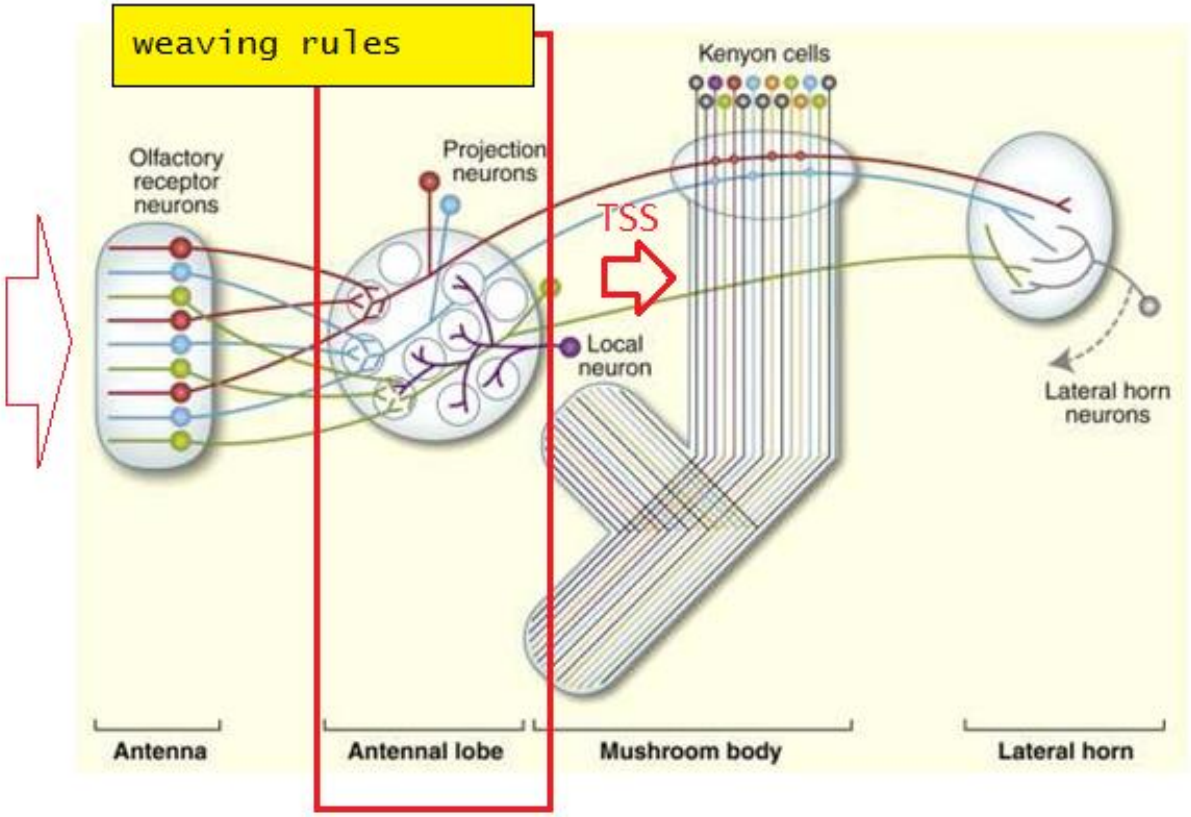
space time distributed odor information



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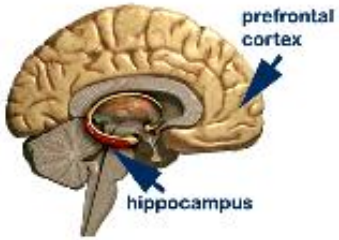

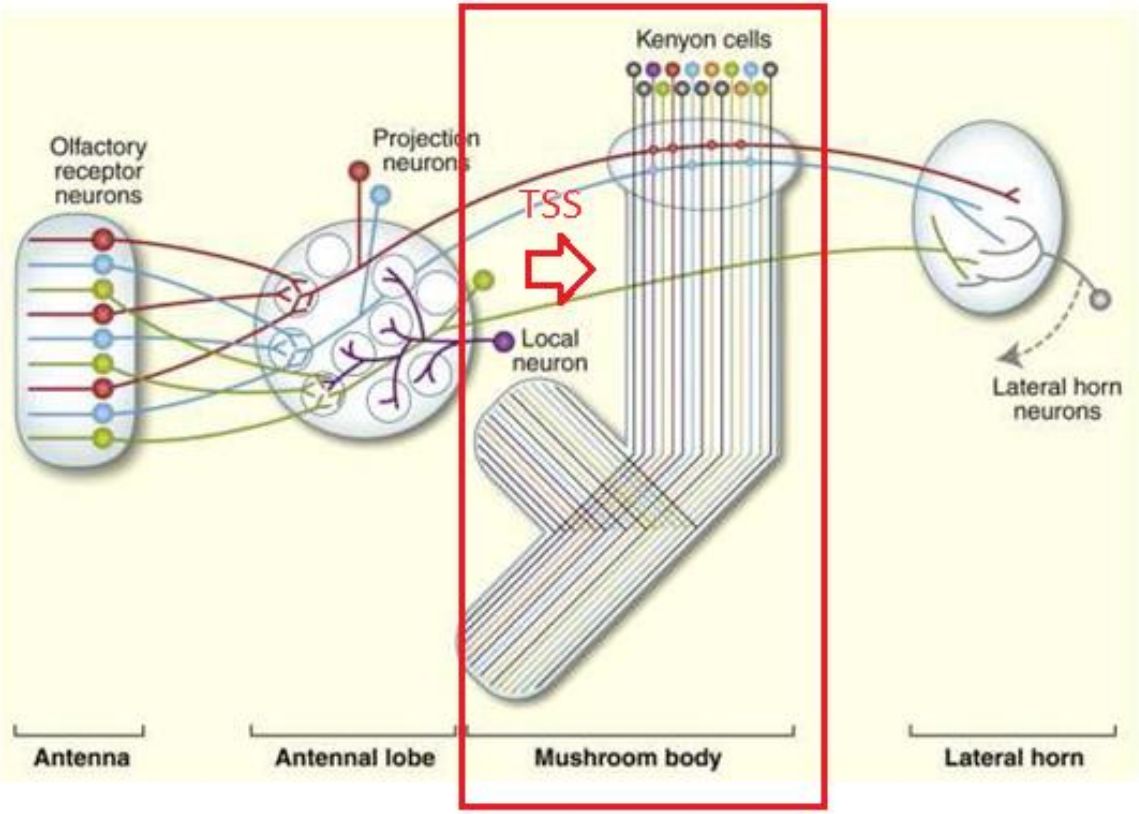

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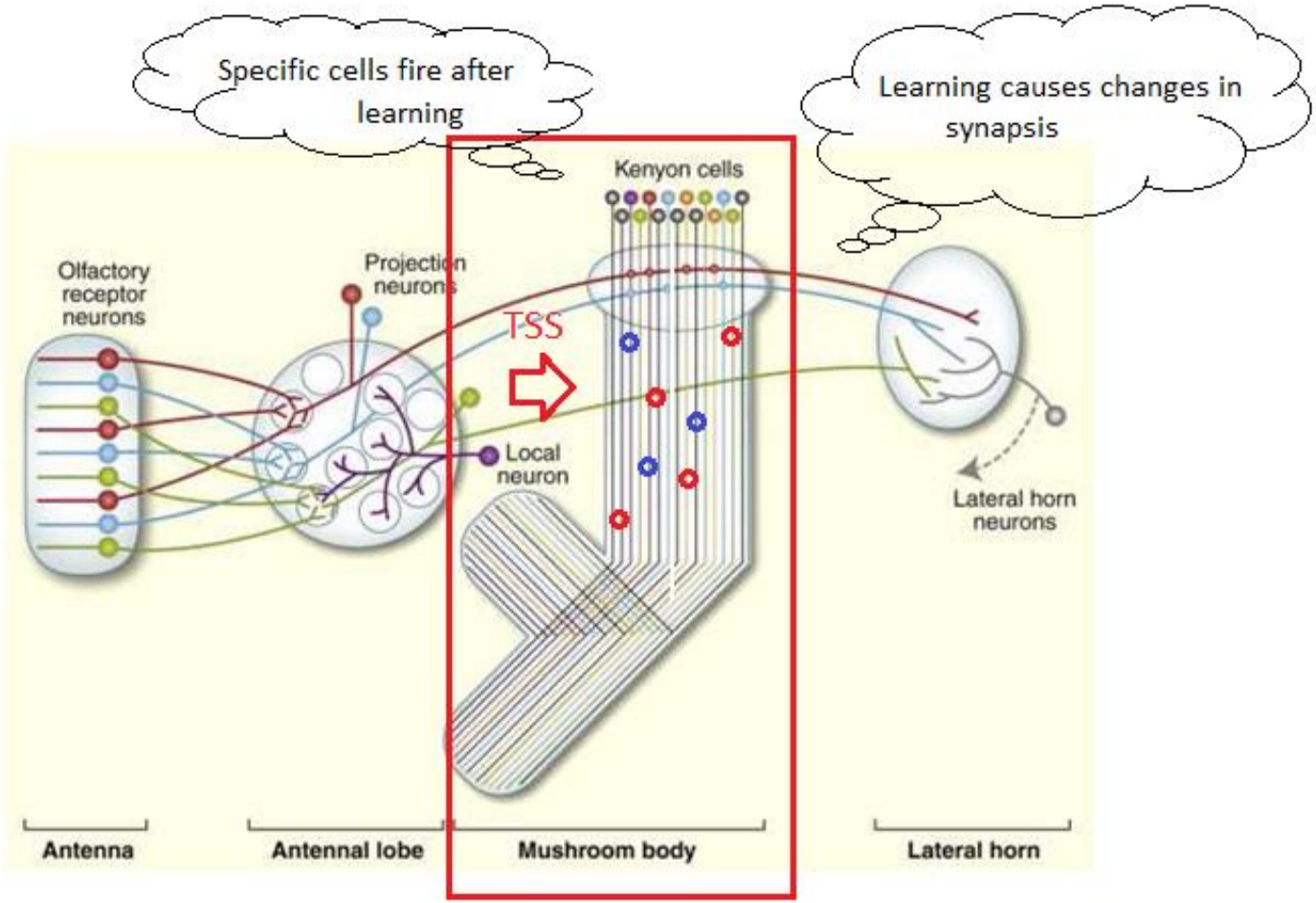

Isolated Learning

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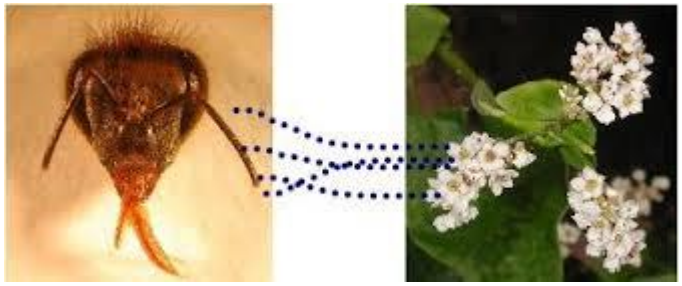
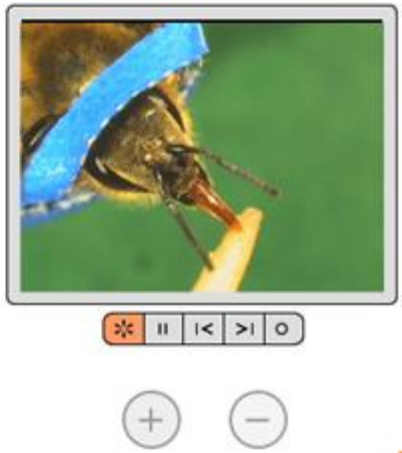


To learn and recognize a pattern (odor)
no counter examples are needed

Limonene Octanol Hexanol ISI=2s US=4s CS=4s

BEE \ TRIAL		Acquisition 1	2	3	Extinction 4	5	6
1	CS+ Group	+	+	+			
2	US Group	+	+	+			
3	*CS Group	+	+	+			
4	US Group	+	+	+			
5	*CS Group	+	+	+			
6	CS+ Group	+	+	+			
7	*CS Group	+	+	+			
8	CS+ Group	+	+	+			
9	US Group	+	+	+			



The proposed Affordance driven Robot

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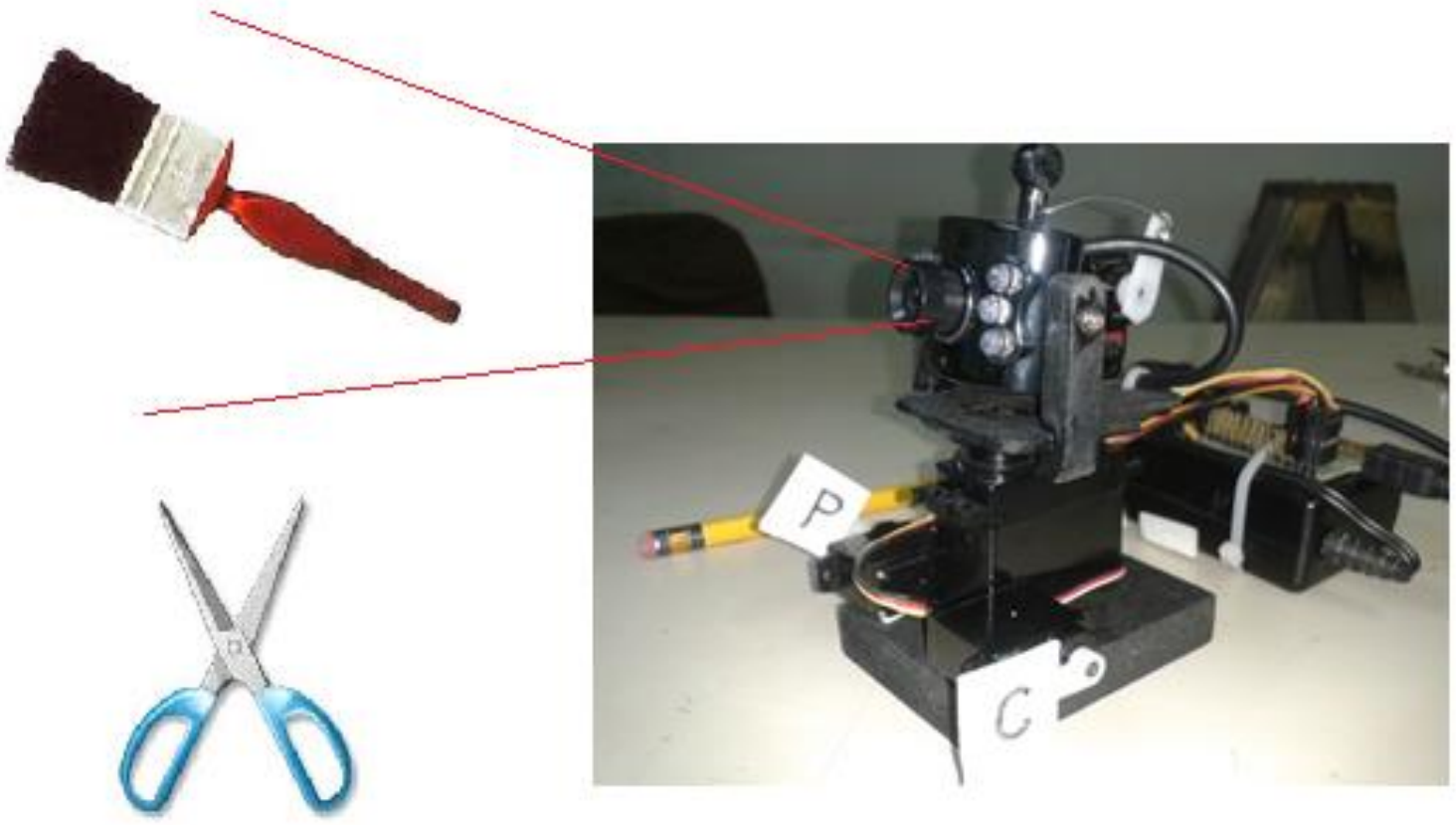

The proposed neural controller

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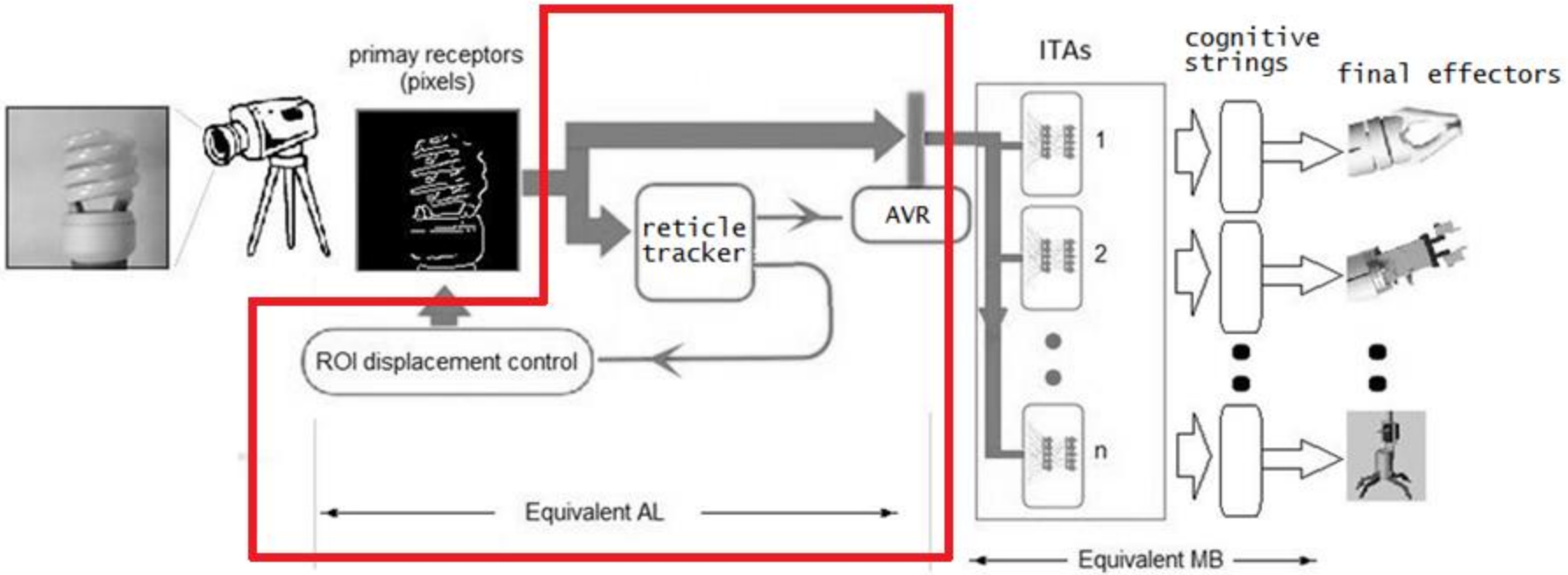

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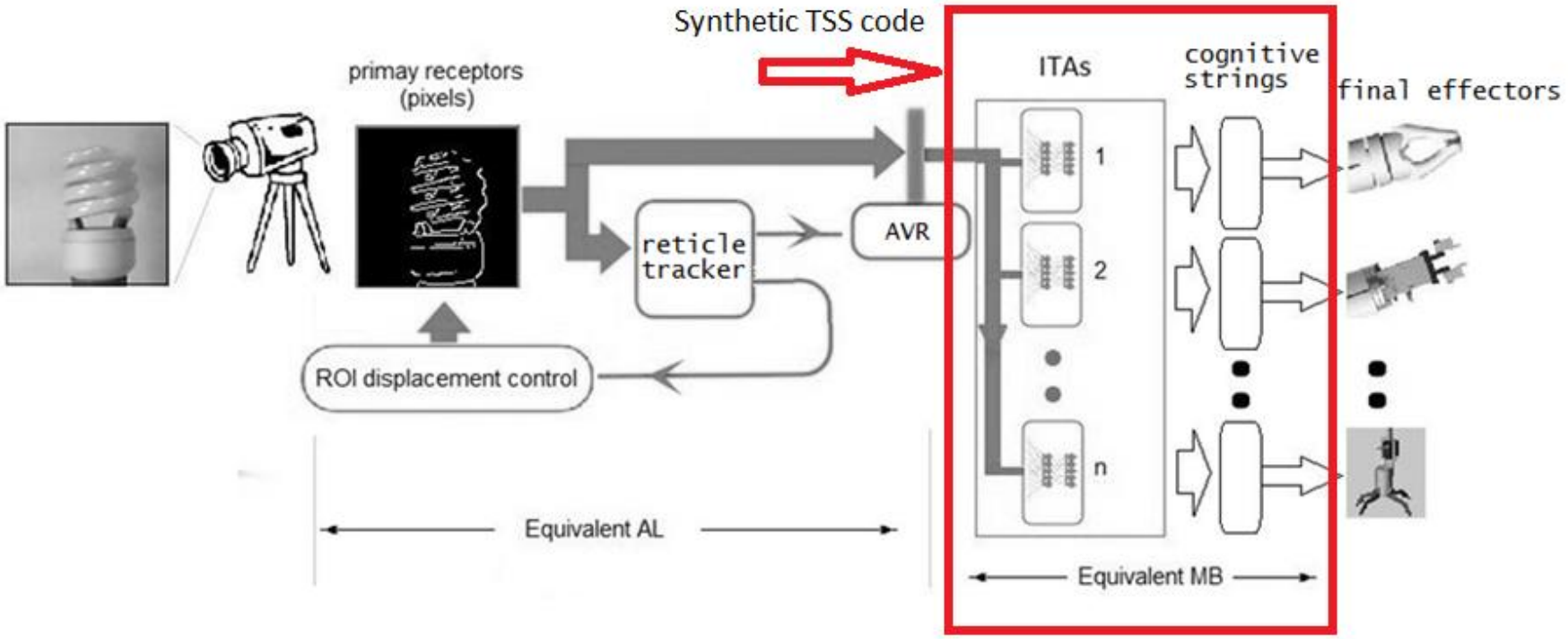

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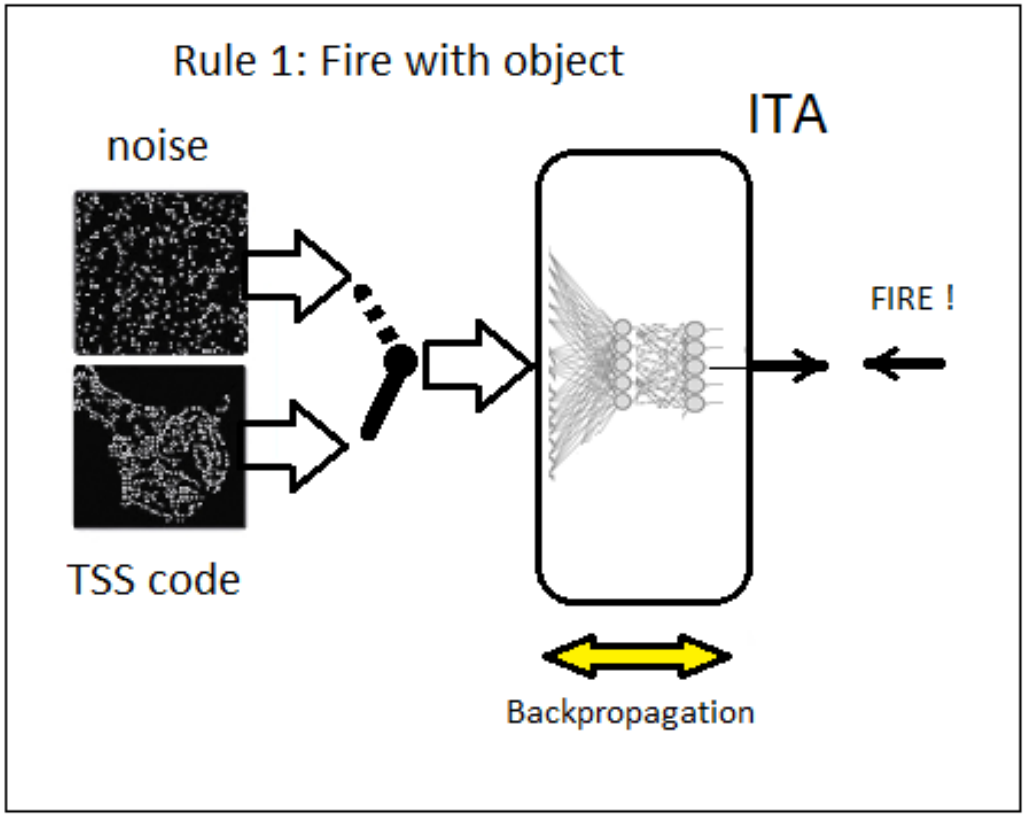

Target set to 1

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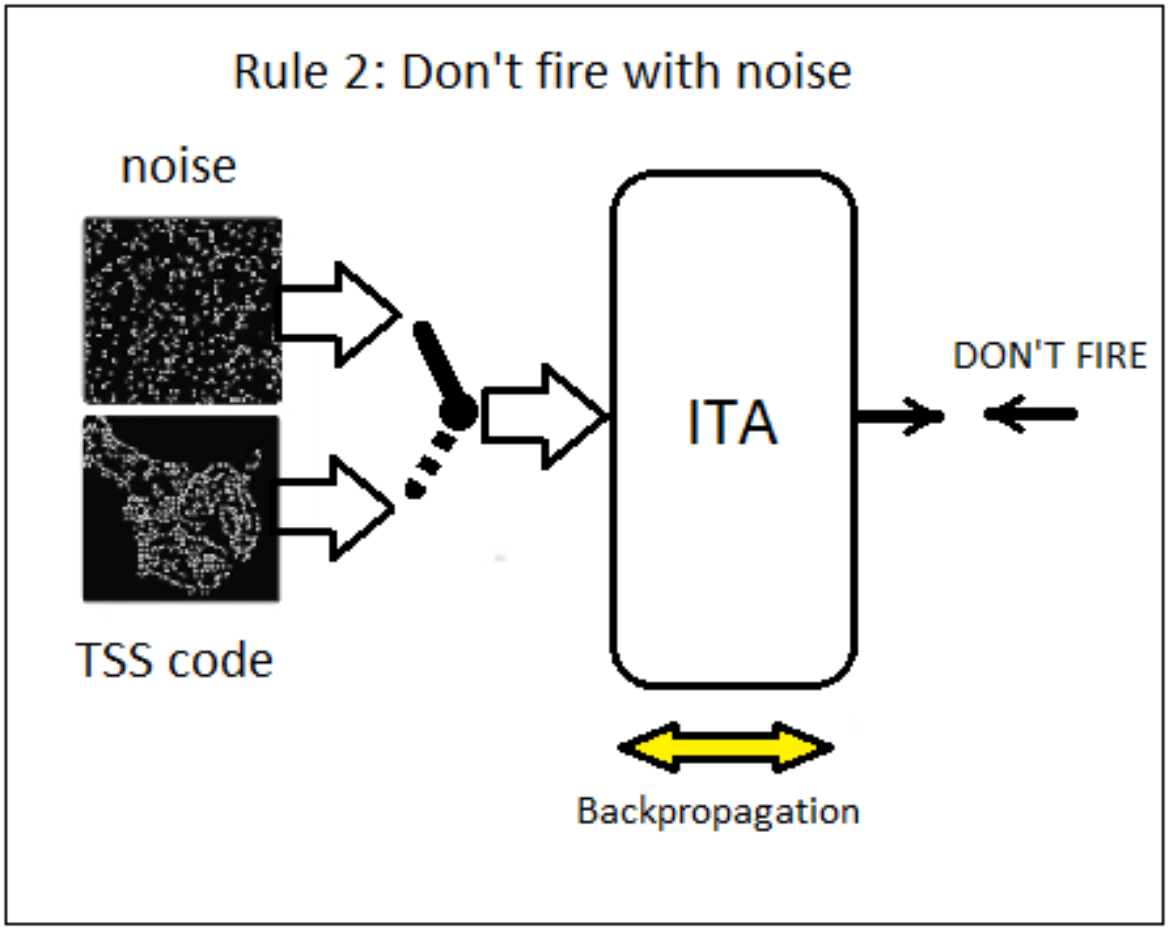

Target set to 0

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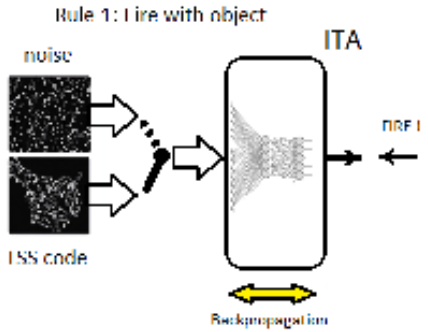
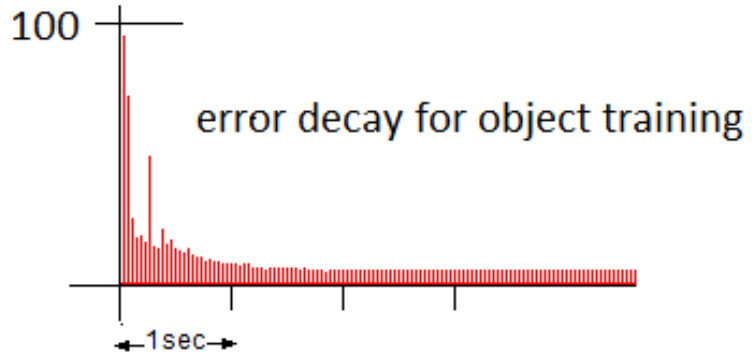
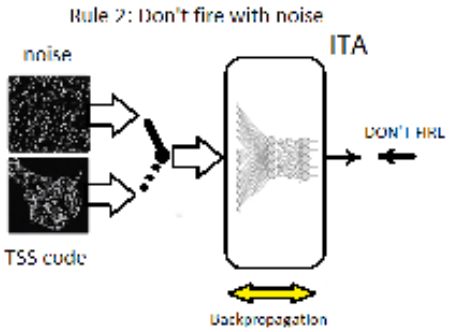
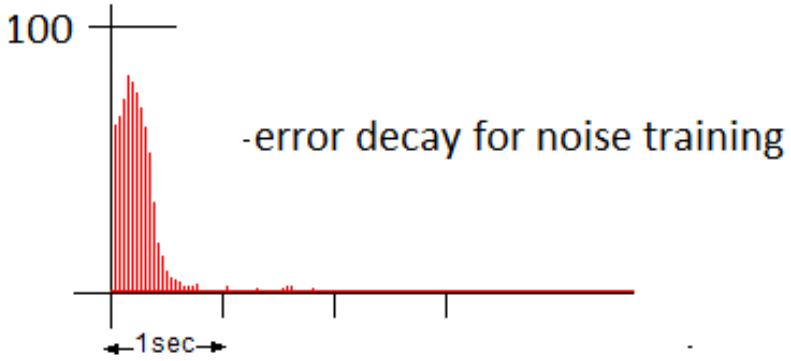
The space-time diagram of one reward









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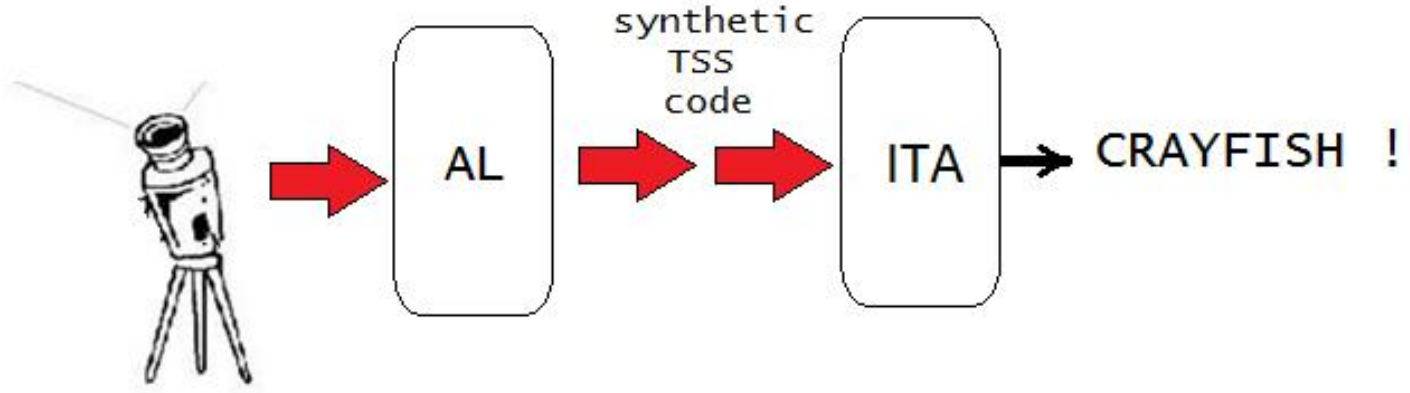

Cognitive String

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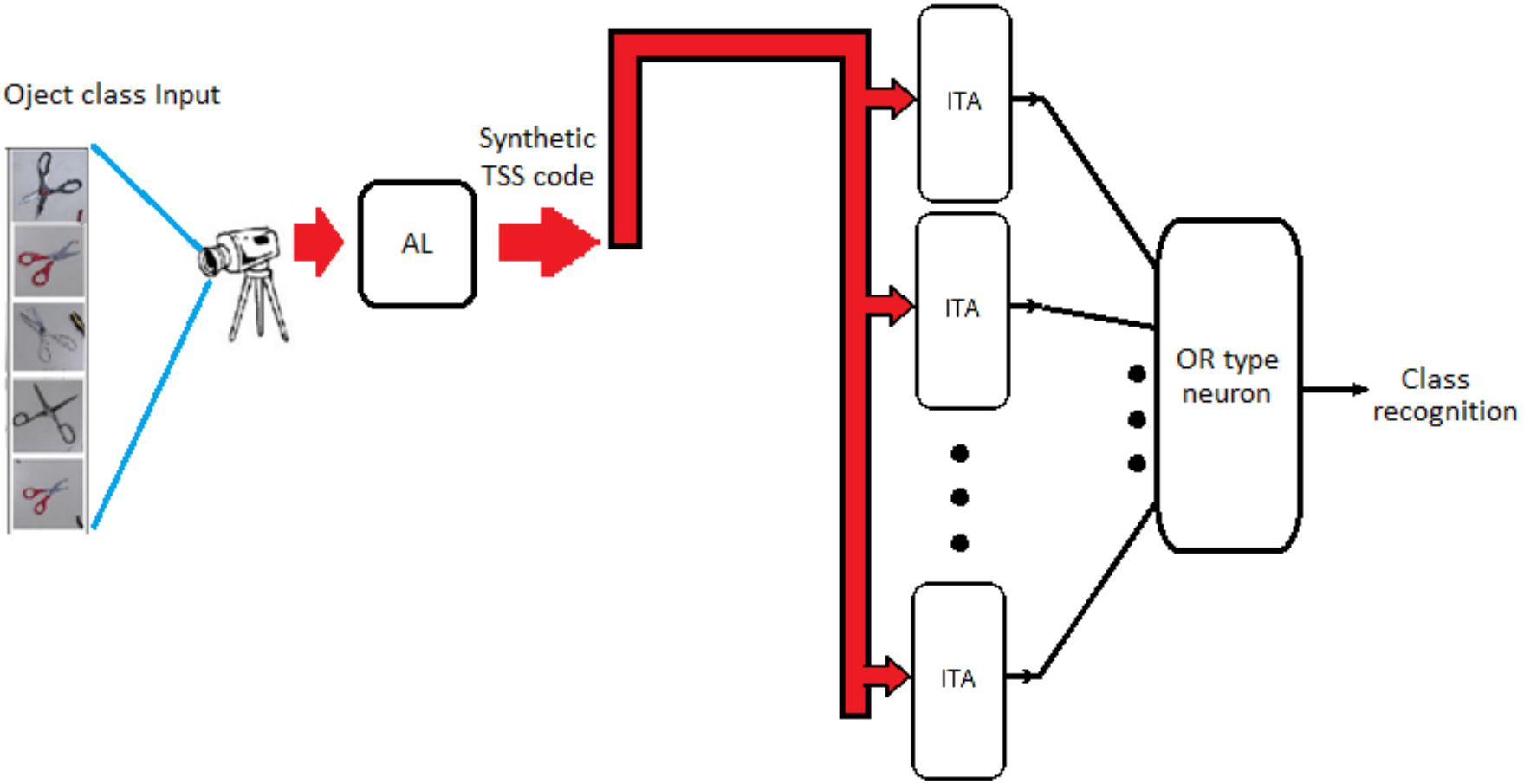

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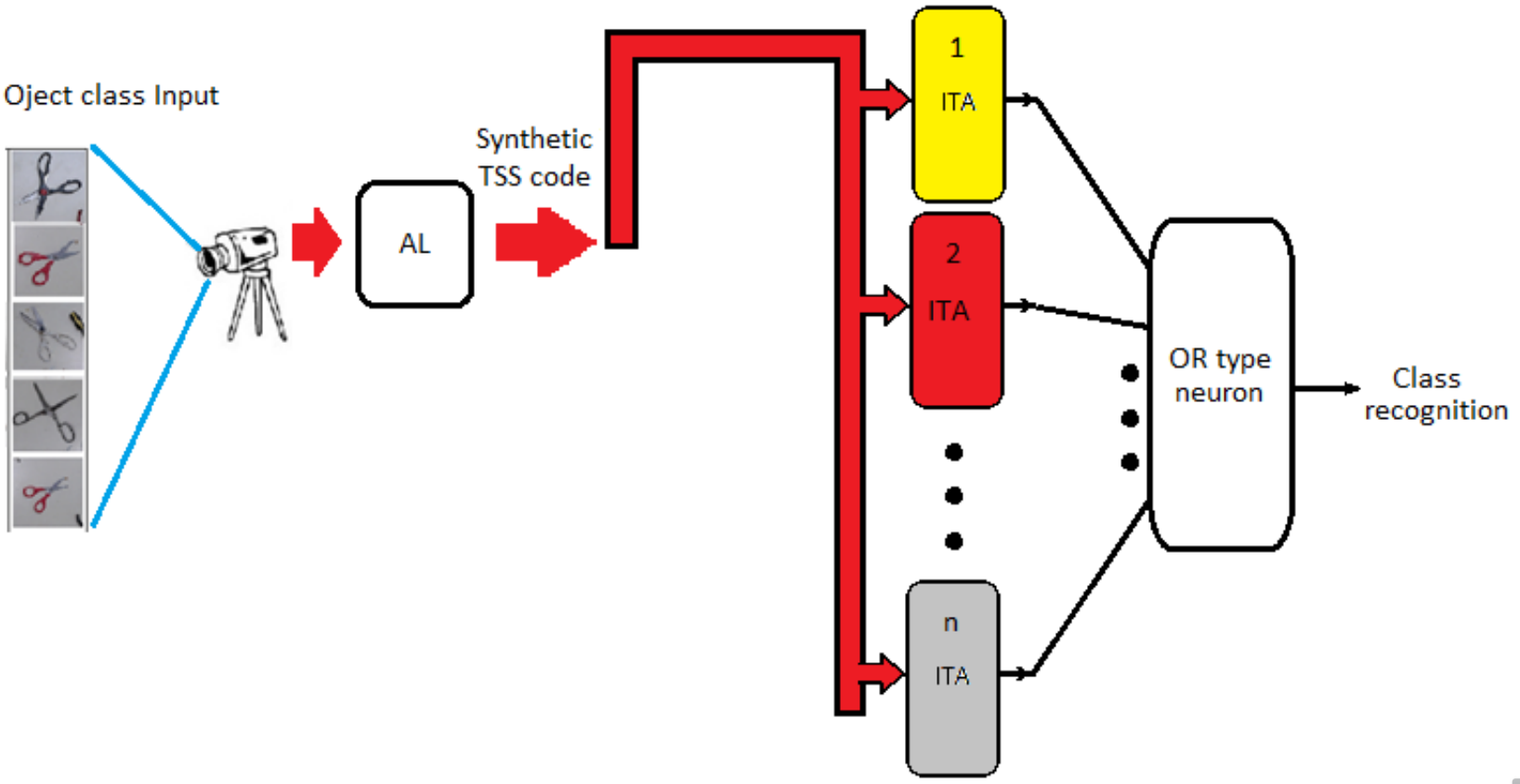
Time-released learning resources



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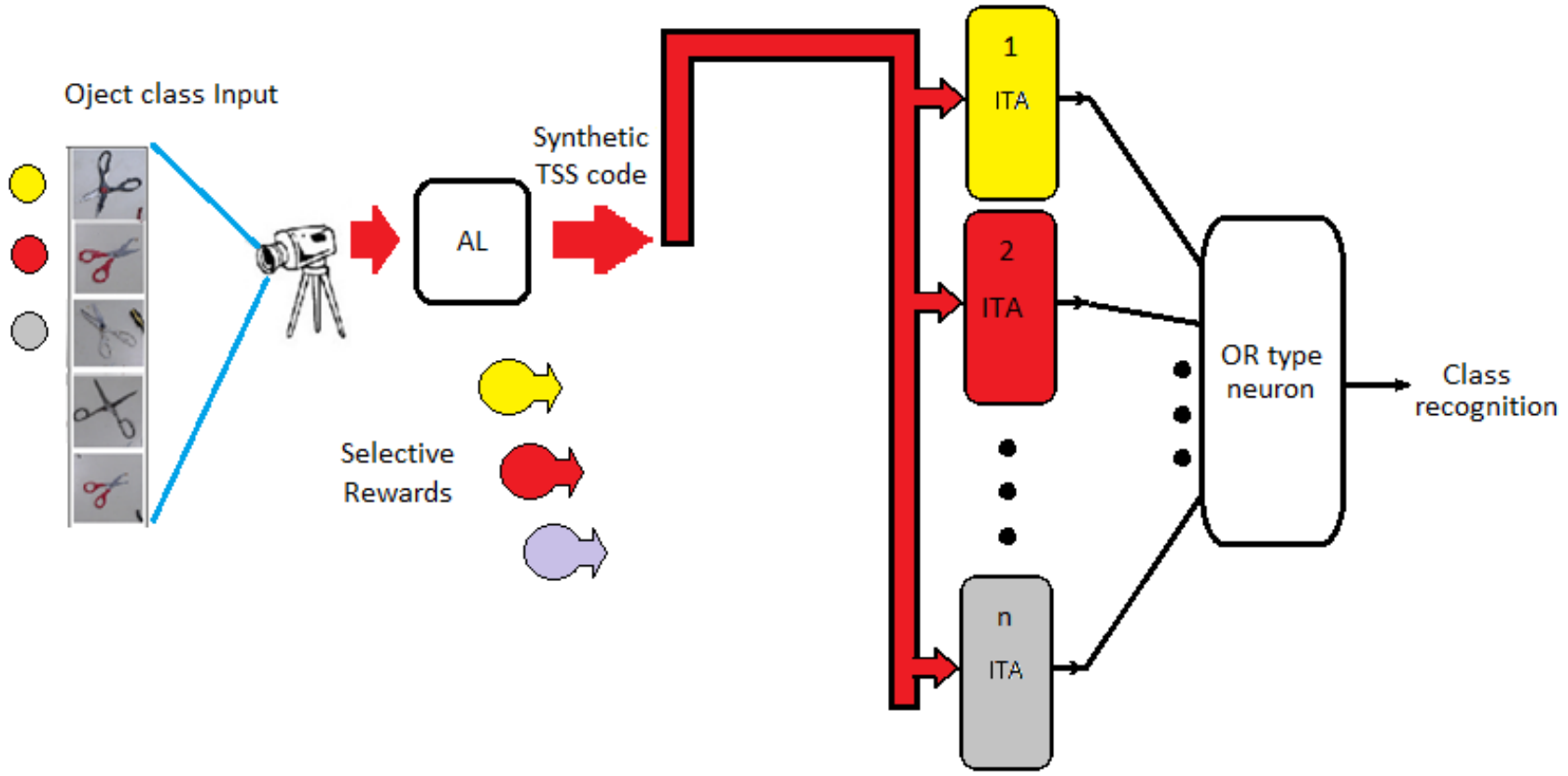
Selective Rewards



Cognitive String

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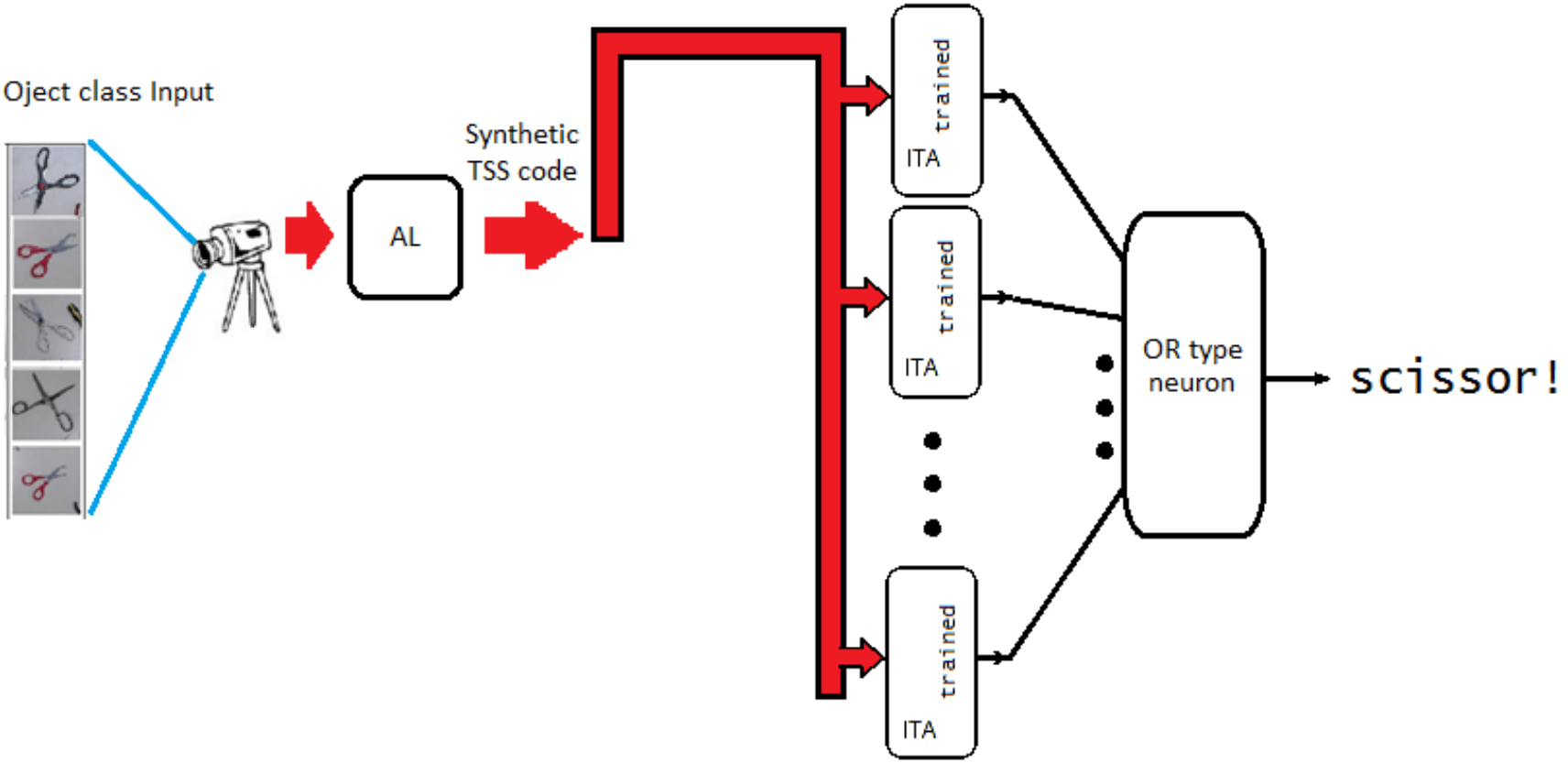

Experiment 1:

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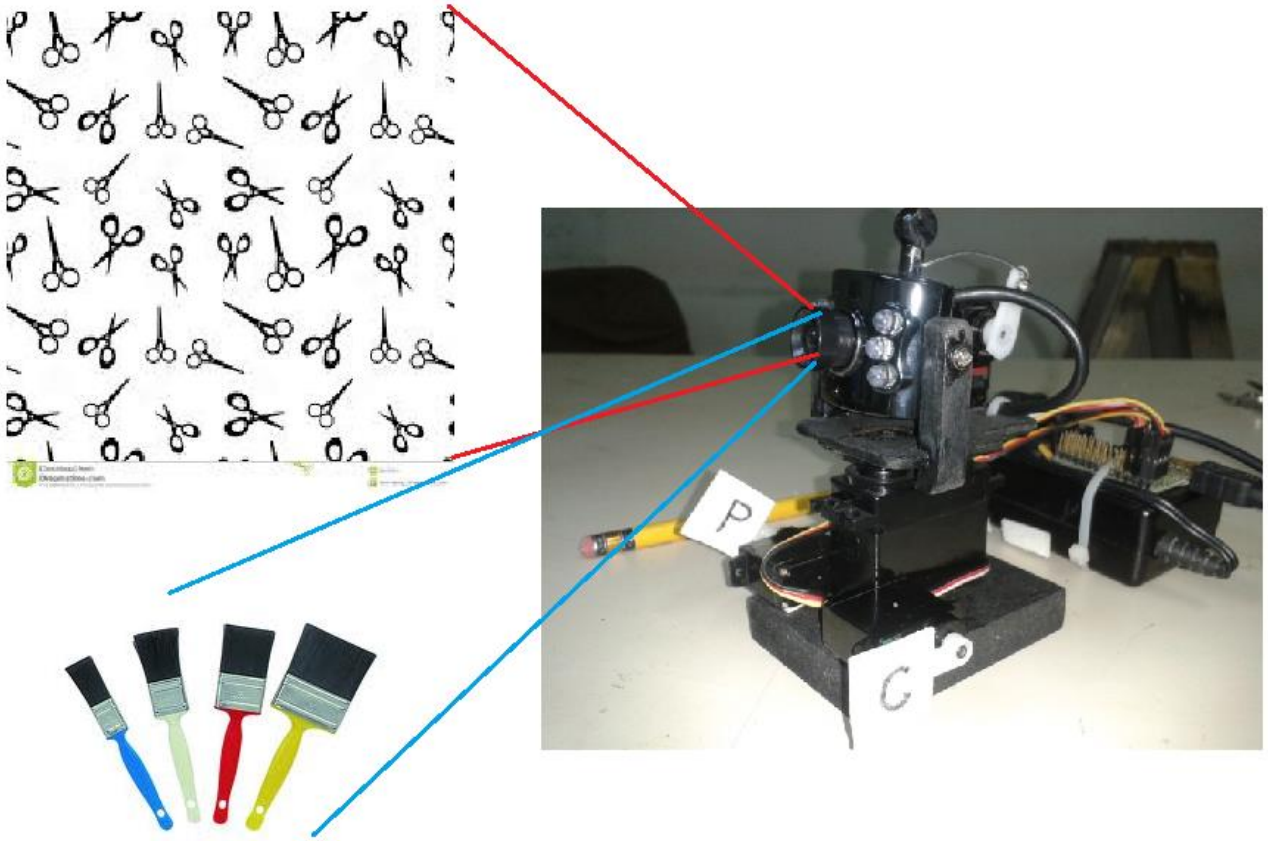
The emergence of affordance perception



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The emergence of affordance perception

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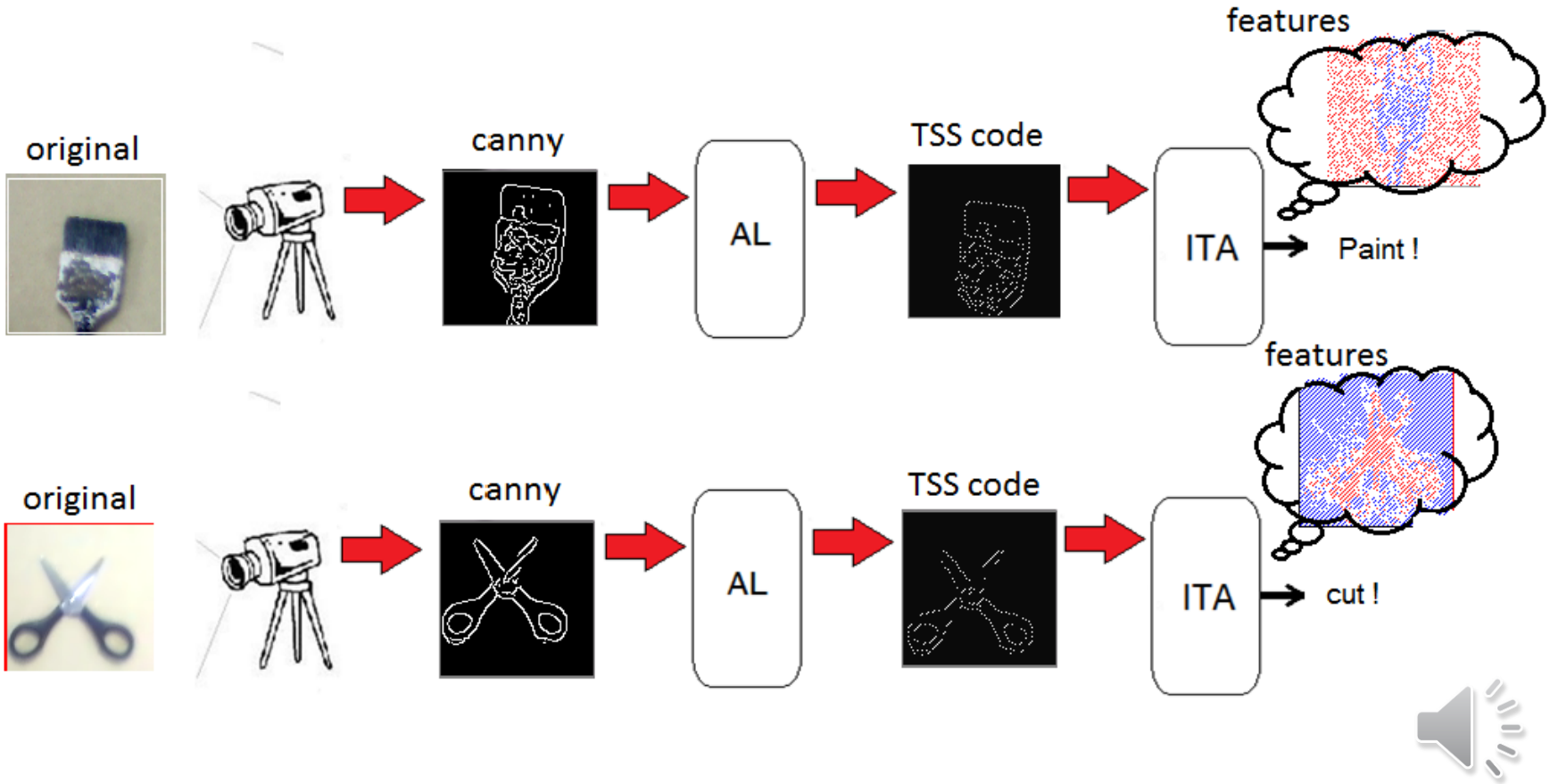
The emergence of affordance perception



Experiment 1:

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The emergence of affordance perception

Experiment 2:

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A non easily distractible eye

Caltech Database

mistaken painting affordances

mistaken cutting affordances

Experiment 2:

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A non easily distractible eye

Discussion

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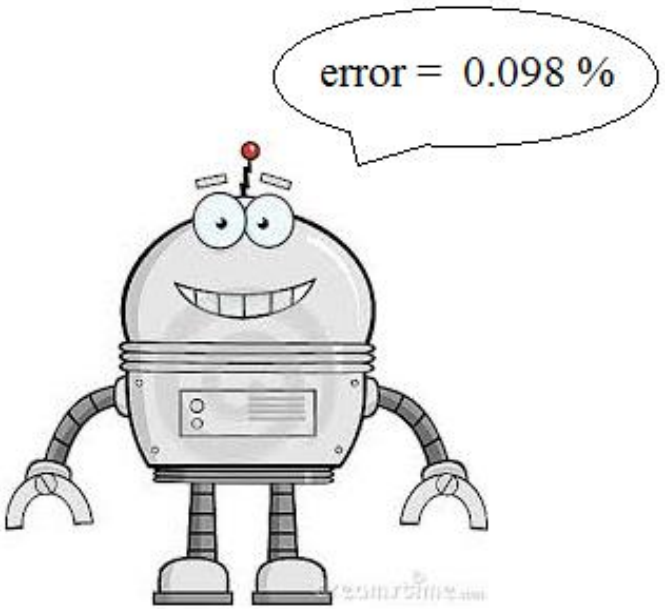
Caltech Database



Discussion

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Affordance Perception

Prolonged learning time

Chain-released learning resources

Exposition to abundant learning examples

Conclusions

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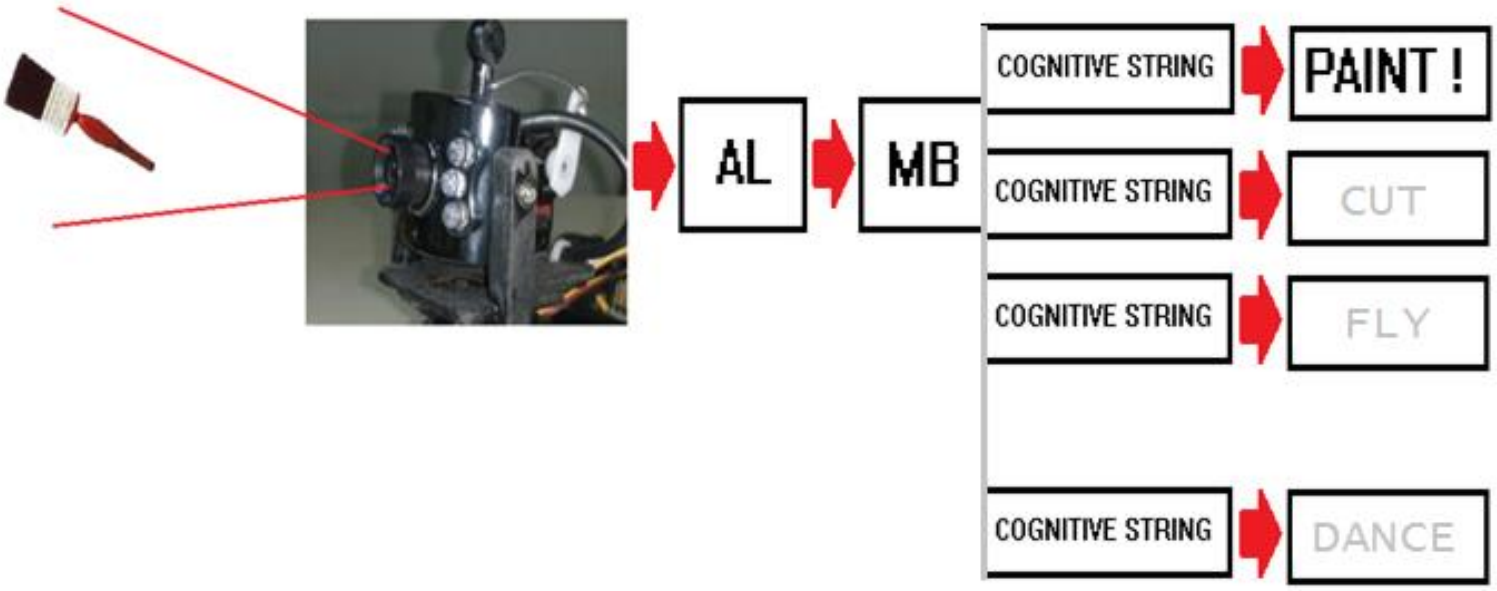
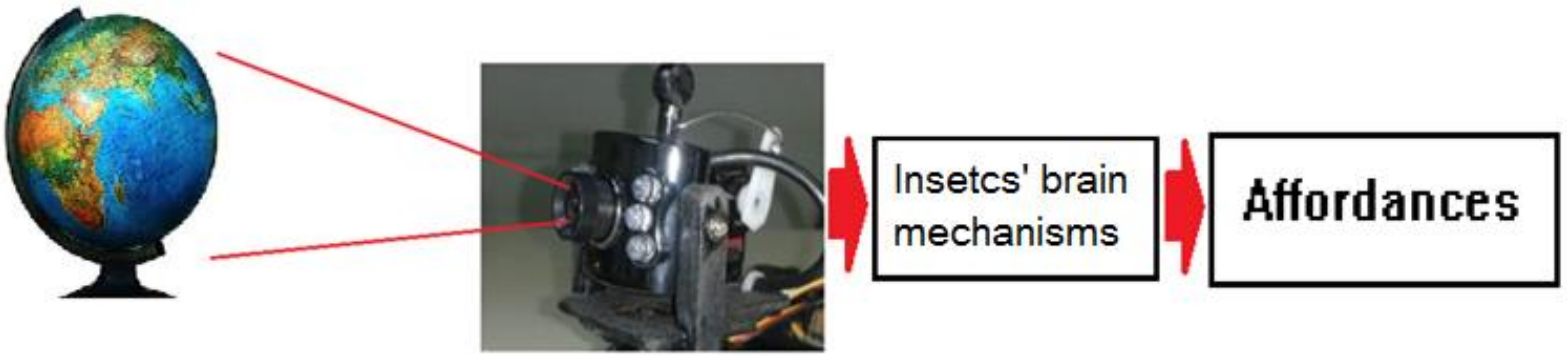


Conclusions

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