COMP3211 Tutorial 2: Simple Agents

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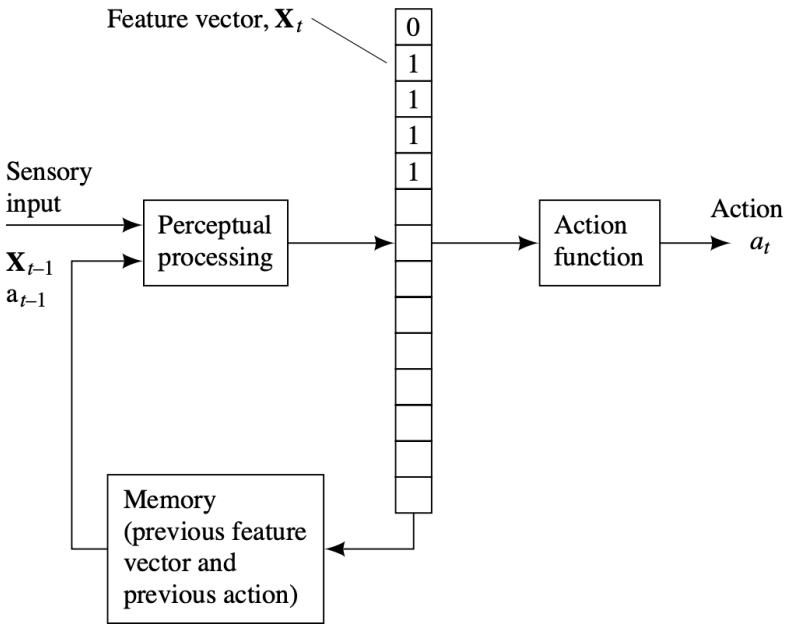
Outline

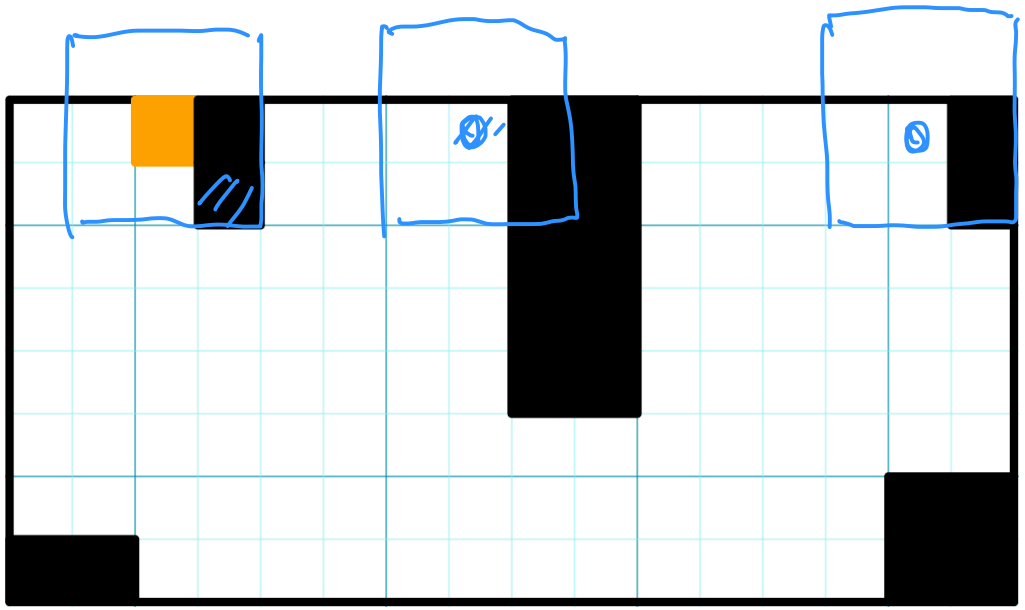
Overview

Simple Agents



Capabilities and Limitations

Example 2:
Can you find a production system by which the agent can reach the goal from any initial position?



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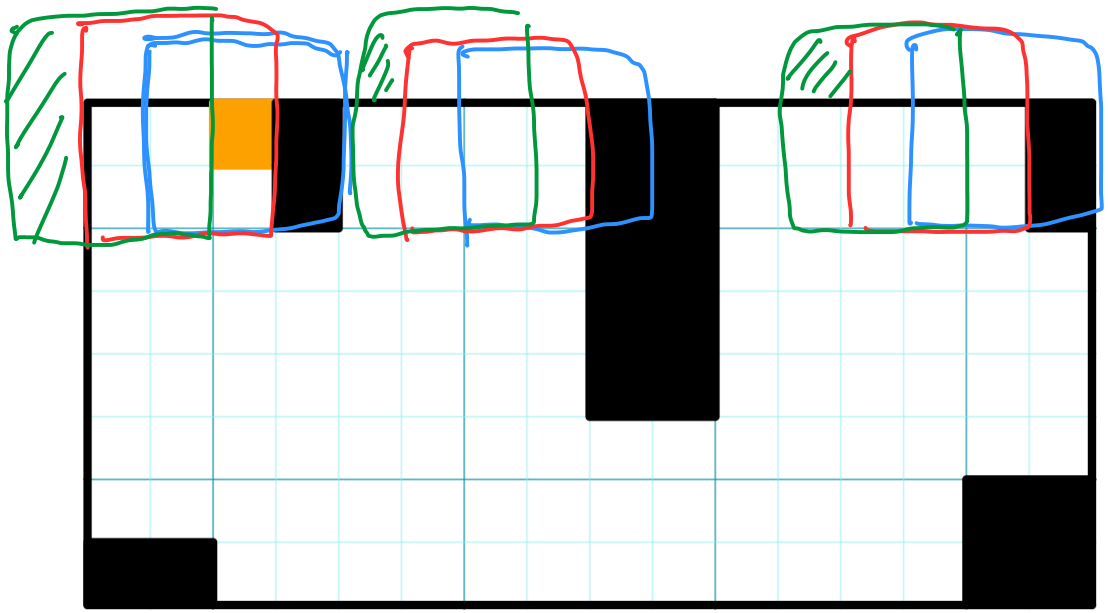
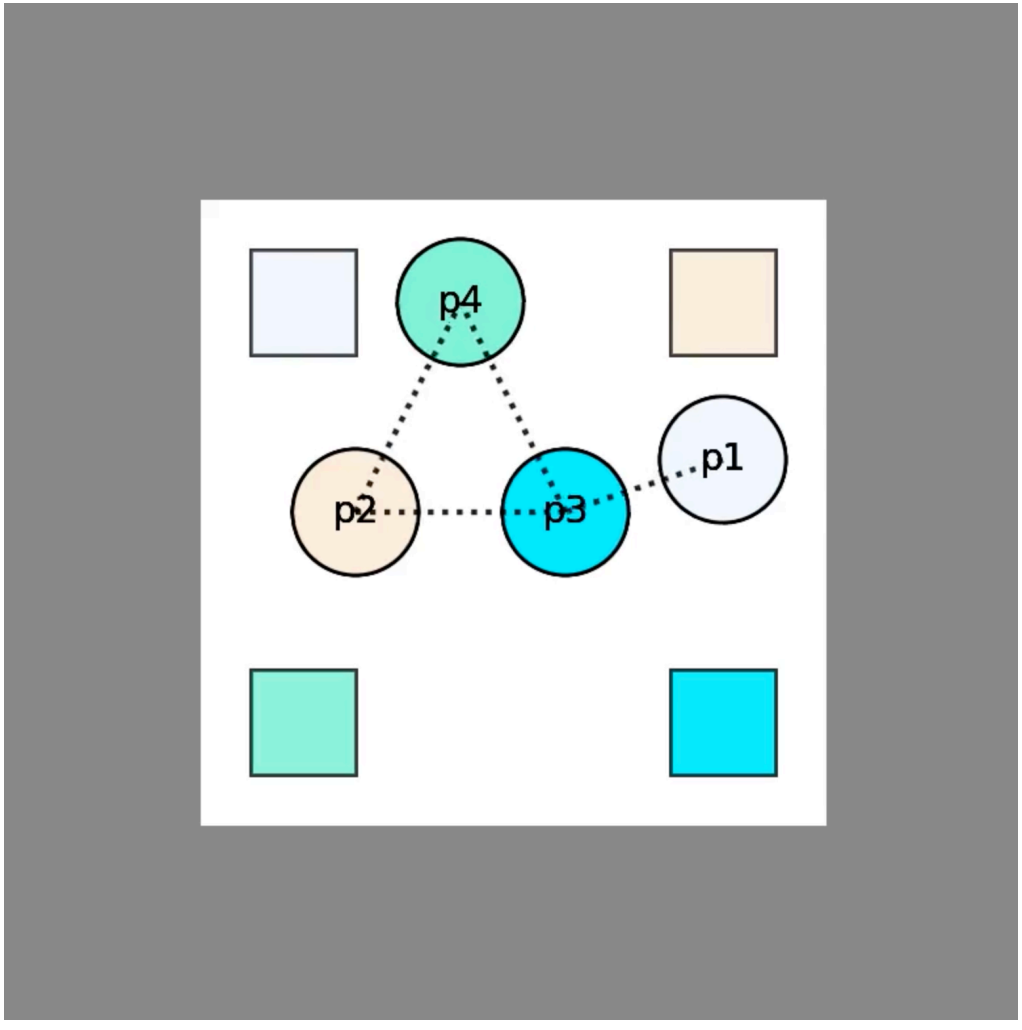


How many past sensory readings should the agent remember? 2

Excercise

How about multi-agents:



Genetic Programming

Biological description

Genetic process:

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Genetic process:

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- Mutation

Application in optimization

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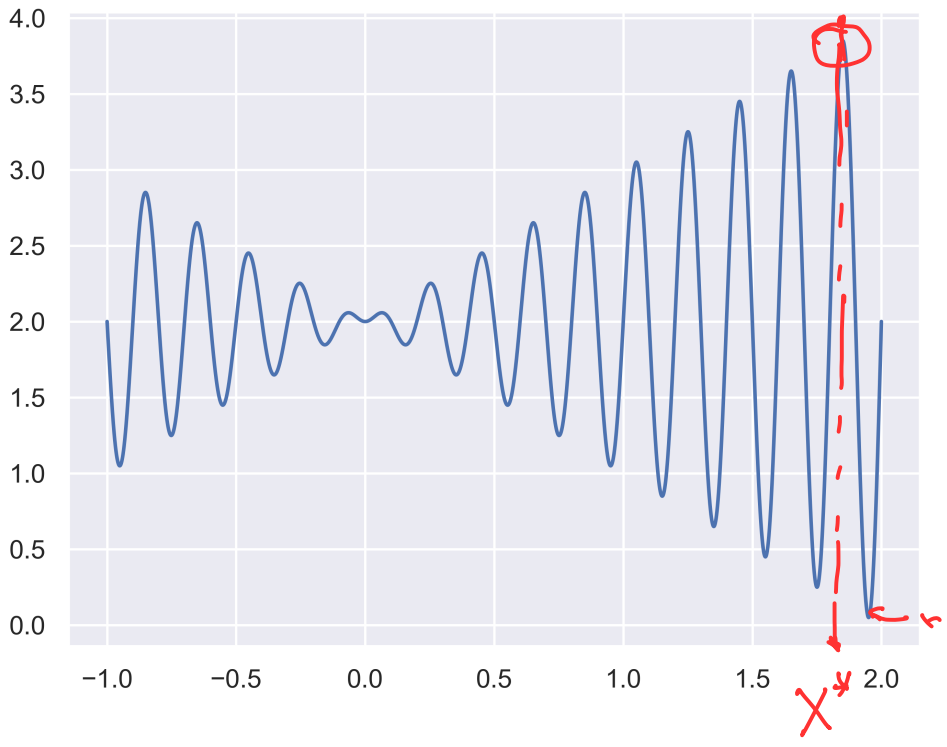
- Quite complicated...



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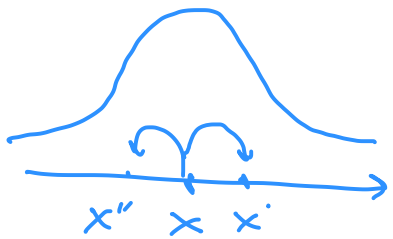

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  - Selection: choose top 2/3 fittest individuals (x's)

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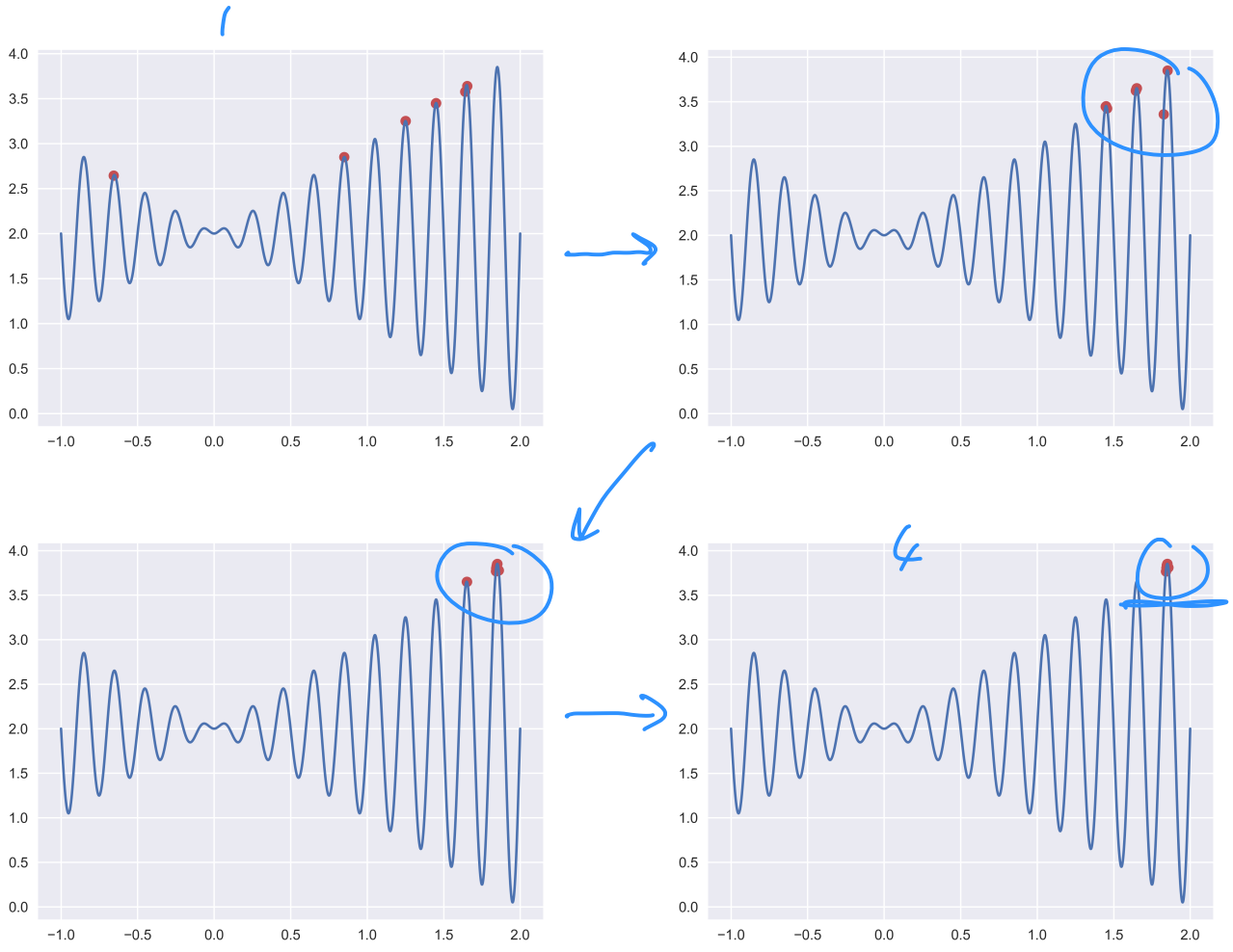

Figure 1: Larger population and more generations

Compared to GD

In terms of optimization, why we still need gradient descent to train a TLU/neural network?

- Genetic programming: zero-order information
- GD (error-correction as a special case): first-order derivatives
- Newton's method: second order derivatives (computing inverse of Hessian matrix is hard)

Thanks!