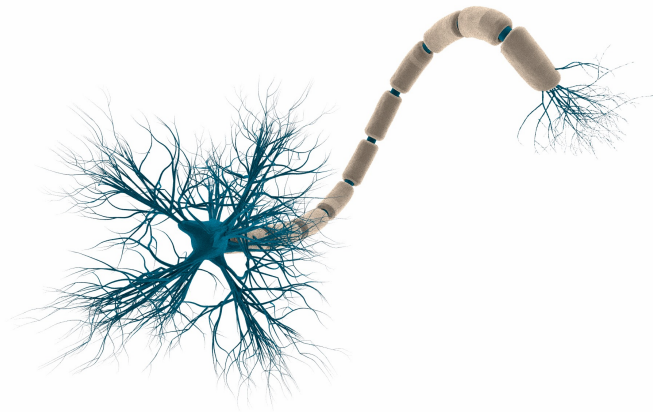


Neural network learning with a genetic algorithm - quadruped walking

Adrianna Janik



Introduction

Introduction

Problem description

Quadruped model

Methodology

Neural network structure

Inputs

Outputs

Genetic algorithm

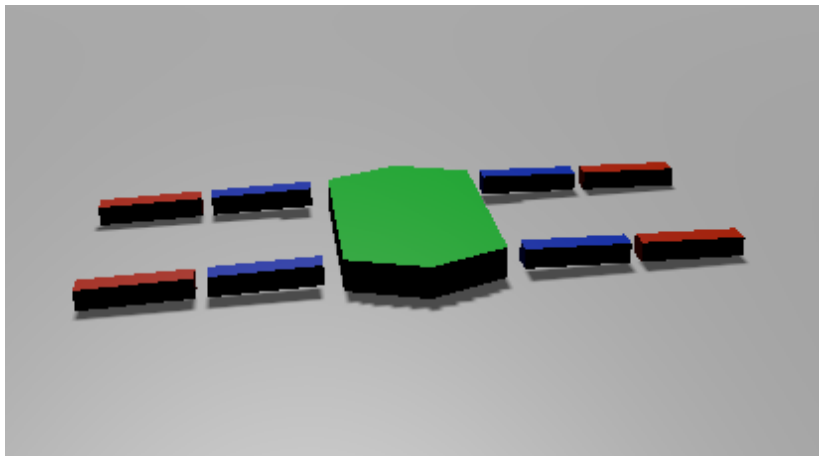
Tools

Fitness function

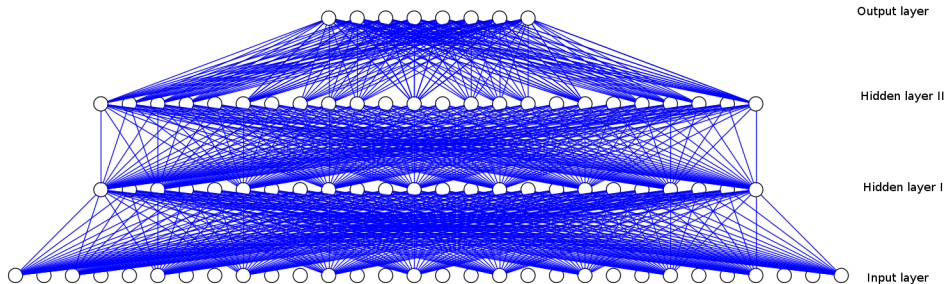
Results

Learning how to walk

Quadruped model



Network architecture



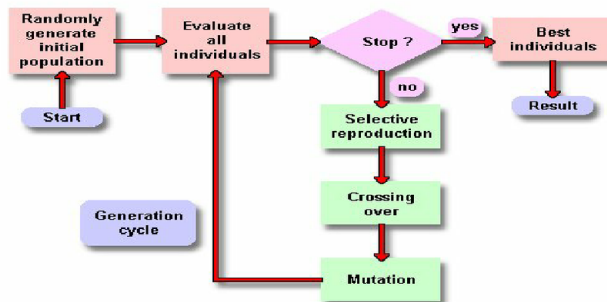
Inputs

- ▶ bad steps
- ▶ local position of legs
- ▶ local position of body
- ▶ linear velocity of body
- ▶ angle velocity of body
- ▶ additional features

Outputs

- ▶ position of each leg

Genetic algorithm



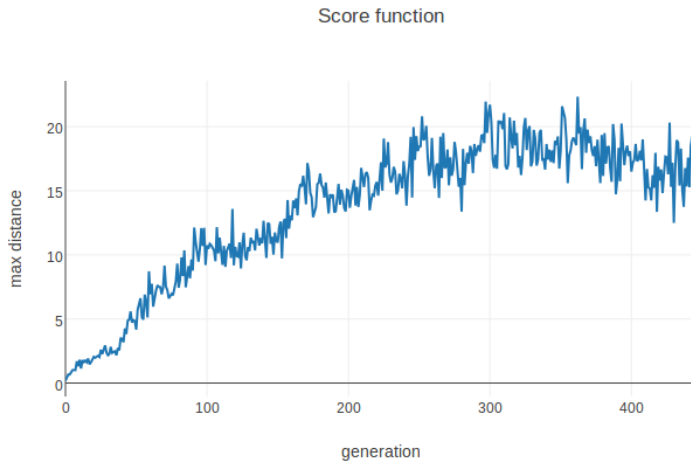
source

Tools

- ▶ Blender 2.68
- ▶ Python 3.3.0
- ▶ libraries: pybrain, numpy, plotly, scipy



Fitness function



Learning how to walk

<https://www.youtube.com/watch?v=mJaI2bnaq9Q>