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2025-0414 CAI-CVR 001

Homework 8

06/06/2-25

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Fitness function

- The fitness function evaluates how well the robot can chase and reach a fixed red cube. It's designed as a **chase-and-catch** task with two possible outcomes:
- Fitness = 1.0 / time_to_reach
- The faster the robot reaches the cube, the higher the fitness
- Units: 1/seconds (inverse time)

Fallback Fitness (Distance-based)

- **When the robot fails to reach the cube** within the time limit:
- Fitness = 1.0/ final_distance_to_cube
- The closer the robot gets to the cube, the higher the fitness
- Units: 1/meters (inverse distance)

Evolutionary Algorithm Implementation

- **Algorithm Type**
- **Steady-State Genetic Algorithm** with elitism and tournament selection
- **Population Structure**
- Each individual represents a complete parameter set for all controllable joints:

Learning Curve