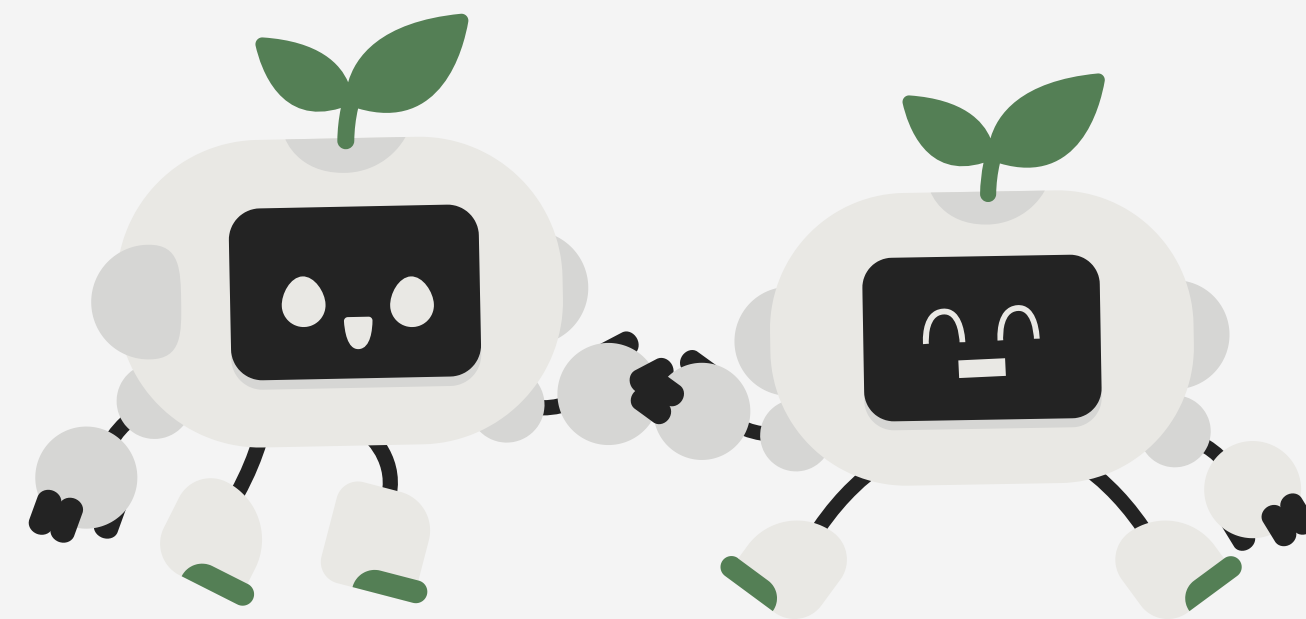


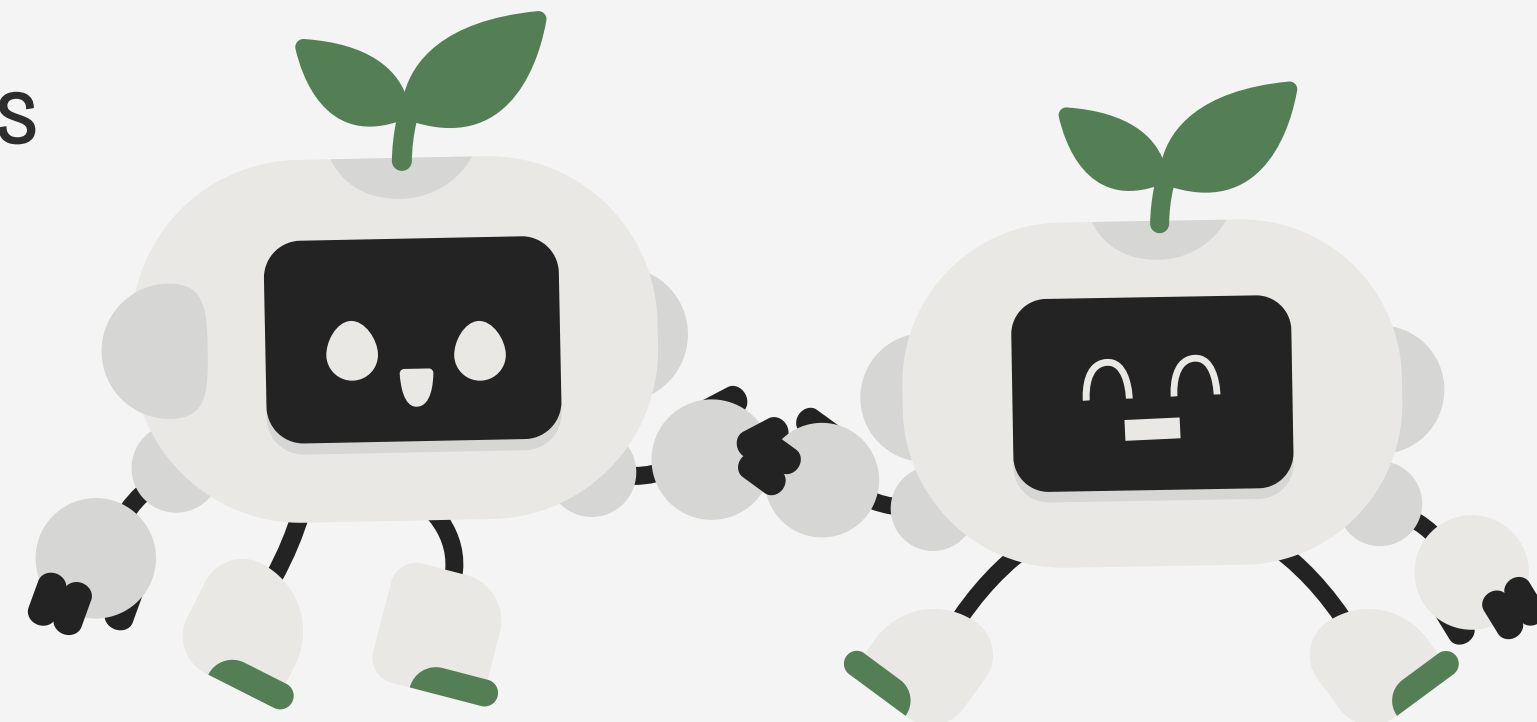
Evolving a Simple Gait for a Bipedal Robot

The **core idea** is to use a genetic algorithm within a physics simulation (Webots) to evolve a functional and efficient walking behavior for a two-legged robot.



Ideology / Concept

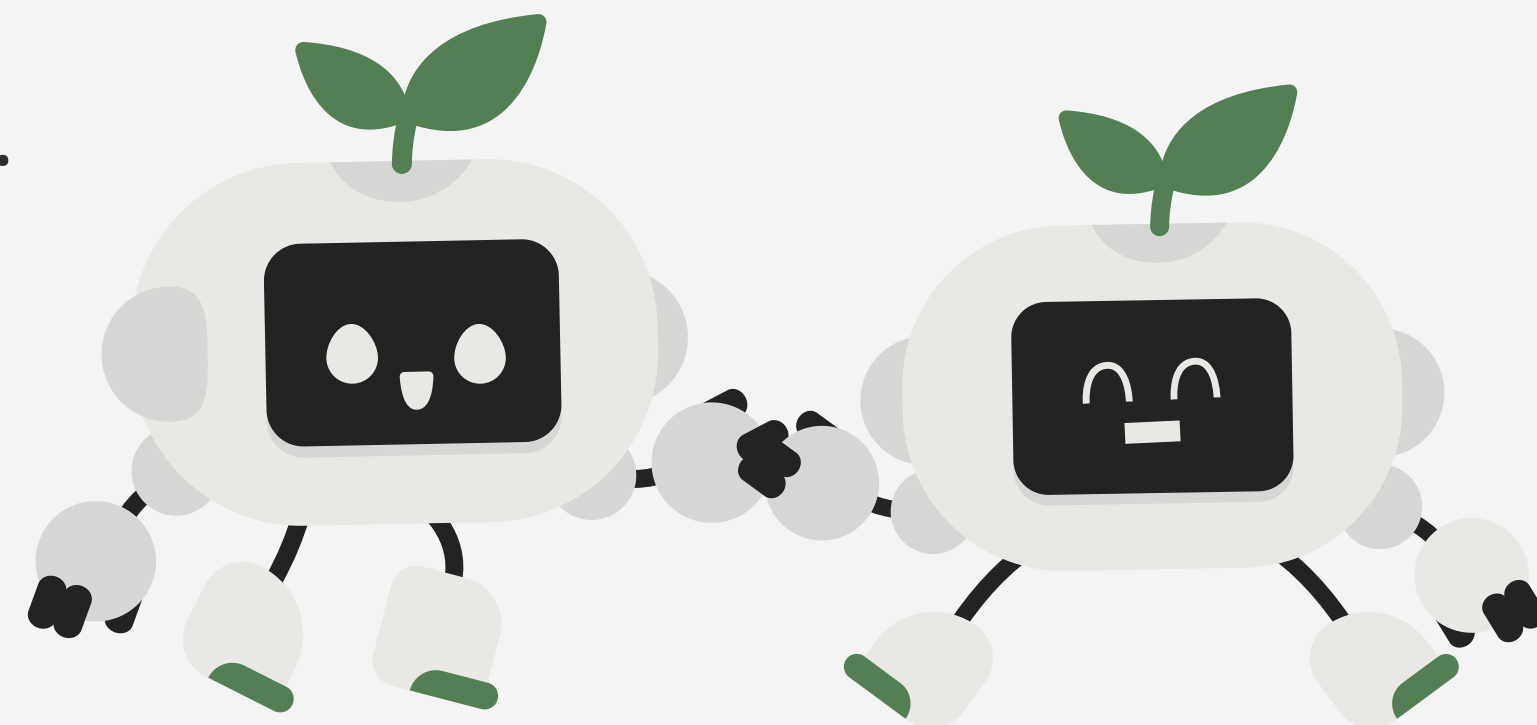
- Simulate evolutionary learning in bipedal robots.
- Robots learn, adapt, and evolve walking strategies over generations.
- Evolutionary algorithms allow self-discovery of optimal movement patterns.
- Phase 1 focuses on laying the foundation for this process.



Phase 1 Goals & Project Structure

Goals:

- Build the bipedal robot prototype (legs, joints, sensors, motors).
- Set up the evolutionary supervisor for multiple robots and generations.
- Define fitness criteria like distance and balance.
- Organize the project structure for modular development.

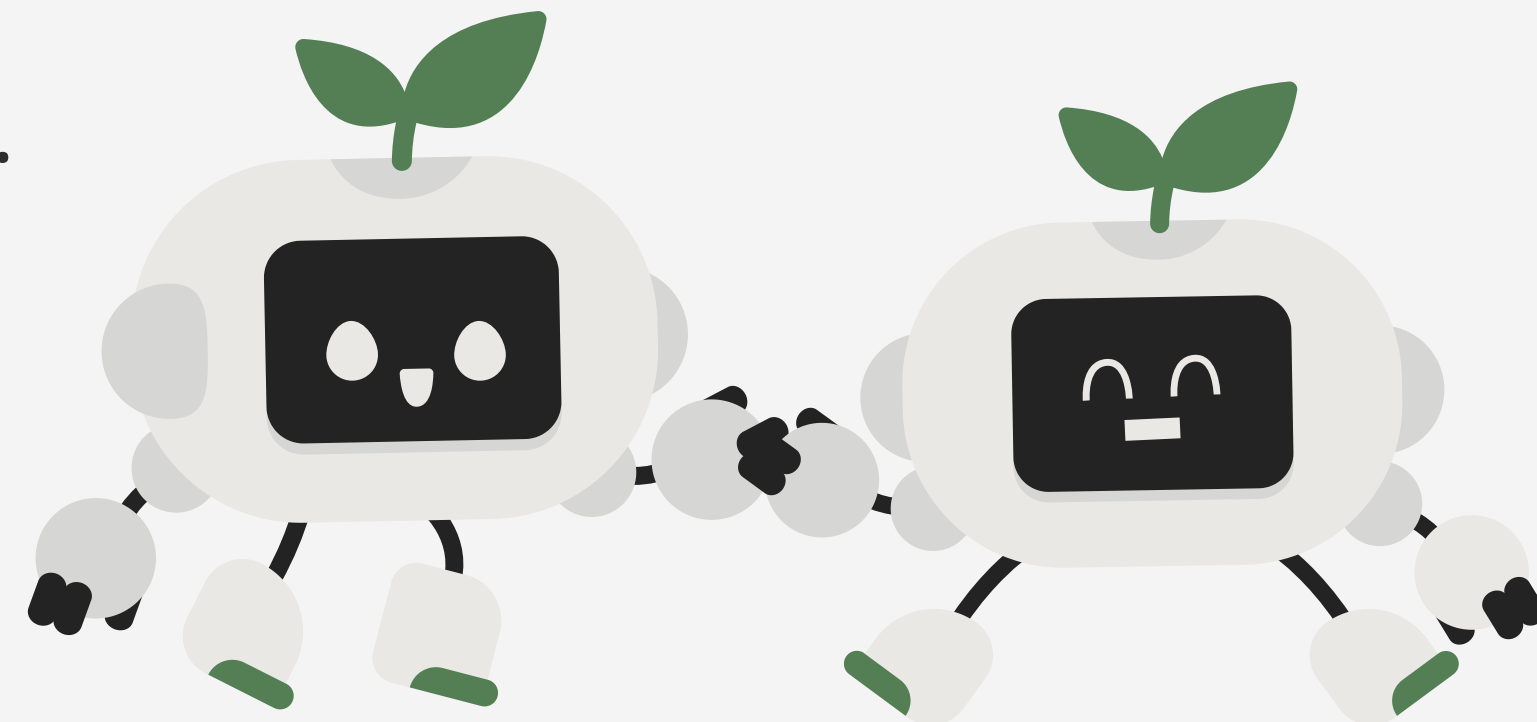




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Phase 1 Goals & Project Structure

Project Structure

```
bipedal_evolution_project/  
├── worlds/  
│   └── evolution_world.wbt          # Main Webots world file  
├── controllers/  
│   ├── evolutionary_supervisor/      # Evolution management  
│   │   ├── evolutionary_supervisor.py  
│   │   ├── genome.py  
│   │   ├── population.py  
│   │   └── environment.py  
│   └── bipedal_robot/               # Individual robot controller  
│       └── bipedal_robot.py
```