



Evolving Worms



Concept

- **Implementation of classical game "worms"**
 - **Competing**
 - **The one which doesn't collide wins**



Implementation Details

- **Static population size 500**
- **Tournament selection (4)**
- **Byte arrays with max 255 instructions**
- **Register language**
- **2 inputs, 2 constants, 3 registers, 1 output (LEFT, RIGHT, FORWARD)**
- **Homologous crossover 90%**
- **Two-points-string crossover 10%**
- **Mutation 20%**



Instruction Set

- +
- -
- /
- *
- **IFGT**
- **STATE**
- **SET**





Observations

- **Initially defensive tactics**
- **Evolving to more aggressive**
- **Eventually (800 000+ tournaments) pacifist behavior**

- **Always turning in the same directions (after initial ambidexterity)**
- **"Radar" gets longer reach**
- **Inner track wins --> U-trap --> U-trap evasion**



Future Work

- **Introducing mines/traps**
- **Promote turning in both directions (two different populations, punishment of stereotype behaviour...)**
- **Introducing apples**
- **Growth determined by genome**



References

- <http://kolonisera.rymden.nu/worms>

