celtra

General Video Game Playing AI Competition

Tom Vodopivec

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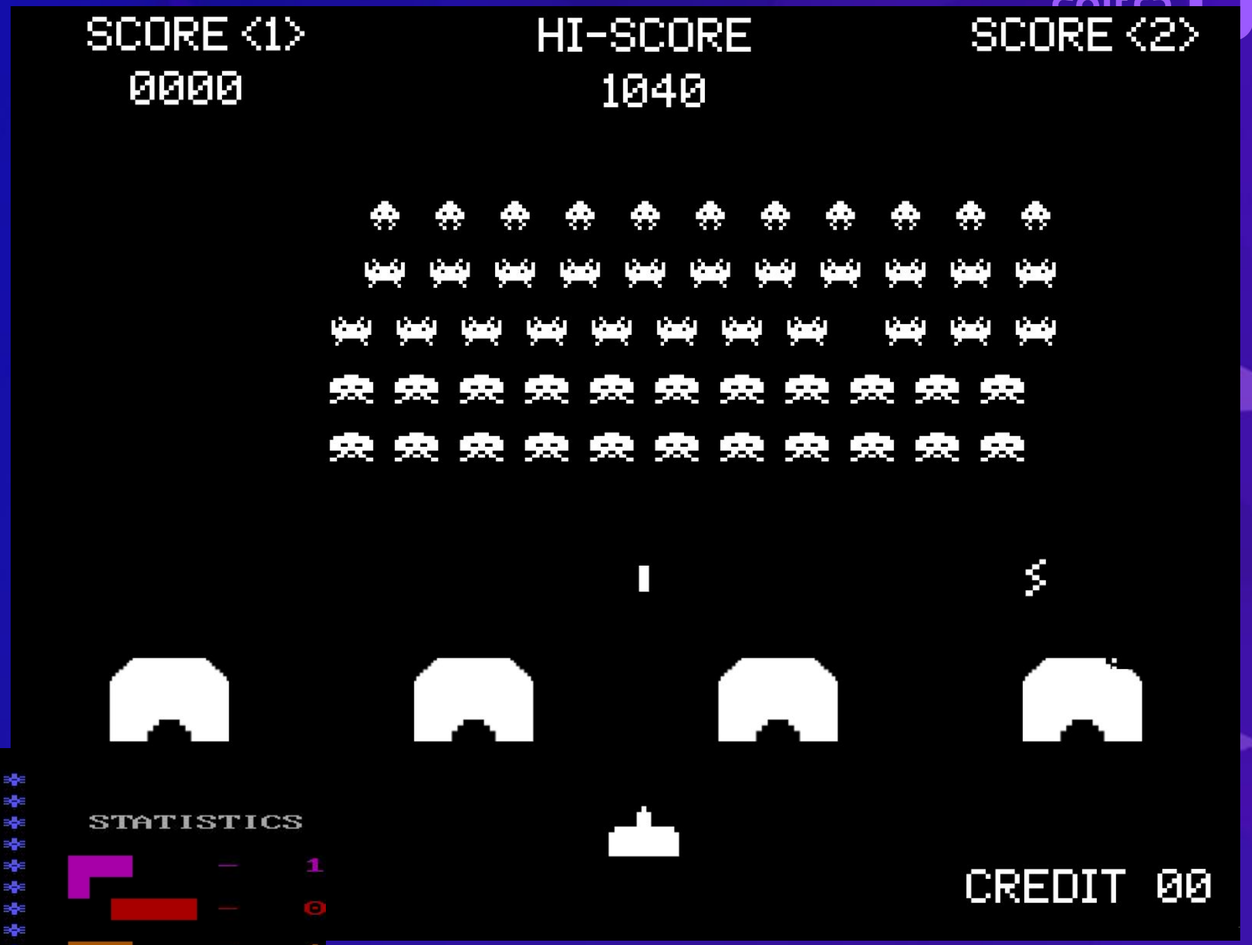
SCORE <1>
0000
HI-SCORE
1040
SCORE <2>
CREDIT 00


Your level: 0
Full lines: 1
SCORE 60
H E L P
7:Left
9:Right
8:Rotate
1:Draw next
6:Speed up
4:Drop
SPACE:Drop
Next:
Play TETRIS !
STATISTICS
1
0
1
1
0
2
1
Σ : 6

The GVG-AI Competition

Since 2014

One of the most popular Game AI competitions

160 games

Examples on youtube

Framework in Java available, easy to use

http://www.gvgai.net/

The Games

Real-time: 40 milliseconds per move

One-player and two-player games

Each game unique story, goal, challenges

The player (agent):

- receives observations of state and a reward signal
- selects one of available moves

Competition Tracks

Playing

- Single-player and Two-player
- Learning and Planning
- Ranked by win rate and score on sets of 10 games by 5 levels each

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Level generation

Game generation

Best Agents

Genetic algorithms, random walks, A*

Iterative Widening, heuristic danger avoidance

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Temporal-difference learning, Sarsa, UCT

MCTS, BFS, sprite-targeting heuristic

The ToVo2 Agent

Reinforcement learning within Monte Carlo tree search

Track	Competition	Rank improvement*	Number of competitors
single-player	CIG 2015	29 → 11	52
	CEEC 2015	23 → 16	55
	GECCO 2016	14 → 9	30
	CIG 2016	20 → 26	29
	GECCO 2017	16 → 9	22
two-player	WCCI 2016	**6 → 1**	14
	CIG 2016	6 → 8	13
	CEEC 2017	**10 → 1**	18

Why is this useful?

Games are excellent benchmarks for decision-making AI

Research: towards general / human-like AI

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Video game industry

- easy-to-implement out-of-the-box algorithms
- believable NPC behaviour
- procedural content generation

User-facing software: automated testing and optimization