

The 2012 PTSP Competition and beyond

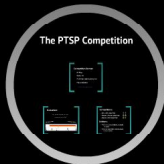
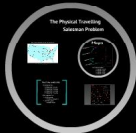
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Game Intelligence Group

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1. The Physical Travelling Salesman Problem



2. The PTSP Competition

3. Results

Results

Bot competition

- 1. Human vs. Bot competition
- 2. Human vs. Bot competition
- 3. Human vs. Bot competition
- 4. Human vs. Bot competition
- 5. Human vs. Bot competition
- 6. Human vs. Bot competition
- 7. Human vs. Bot competition
- 8. Human vs. Bot competition
- 9. Human vs. Bot competition
- 10. Human vs. Bot competition

Human competition

- 1. Human vs. Bot competition
- 2. Human vs. Bot competition
- 3. Human vs. Bot competition
- 4. Human vs. Bot competition
- 5. Human vs. Bot competition
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Human vs. Bot competition

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- 10. Human vs. Bot competition

4. The Future

The Future

Game competitions in the community:



This is brilliant...

... but:

- Aggressive with lots of heuristic, domain-related solutions
- Over-optimization: General Game Playing competition: www.ggp.org/
- What about a General Video Game Playing competition?



Also competition running in 2012



The Physical Travelling Salesman Problem

The Travelling Salesman Problem



Maps



Time to visit next waypoint:

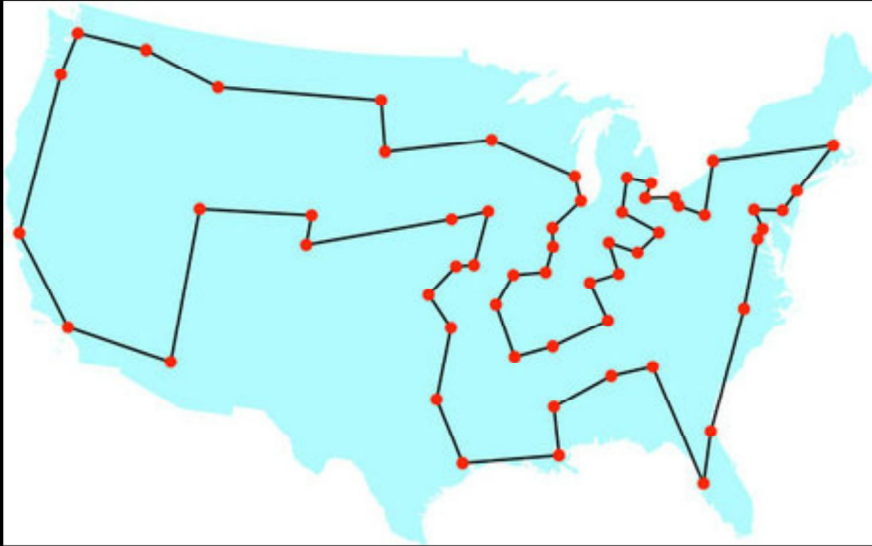
- 10 waypoints: 1000 ticks
- 30 waypoints: 3000 ticks
- 40 waypoints: 4000 ticks
- 60 waypoints: 6000 ticks

Real time constraints

- Initialization time:
 - 10 waypoints: 1 second.
 - 30 waypoints: 3 seconds.
 - 40 waypoints: 4 seconds.
 - 50 waypoints: 5 seconds.
- Cycle response time:
 - 40 milliseconds.
 - Neutral action applied.
 - 120 milliseconds.
 - Disqualification.

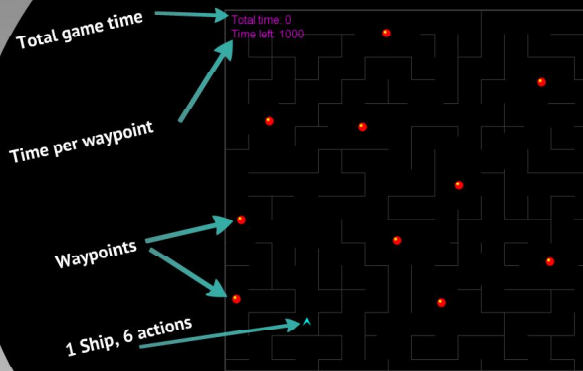


The Travelling Salesman Problem



The Travelling Salesman Problem: A Case Study in Local Optimization, D. S. Johnson and L. A. McGeoch,
in *Local Search in Combinatorial Optimization*, pp 215-310, 1997

Maps



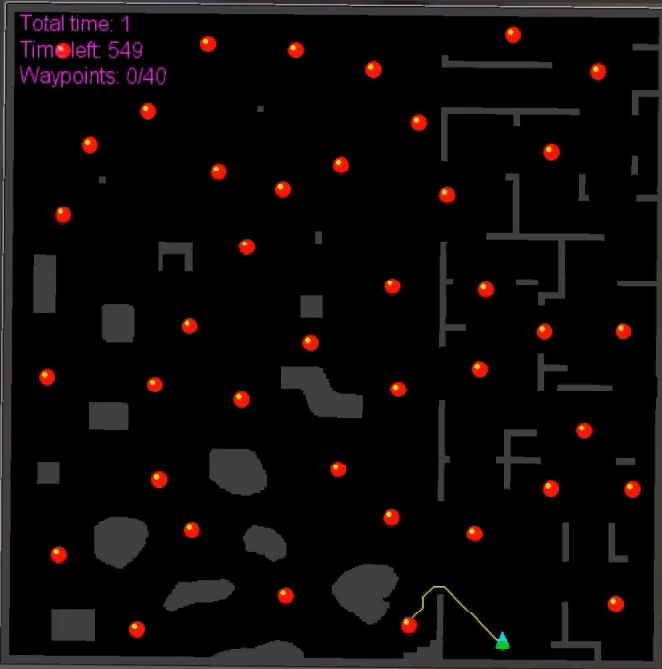
Time to visit next waypoint:

- 10 waypoints: 1000 ticks
- 30 waypoints: 700 ticks
- 40 waypoints: 550 ticks
- 50 waypoints: 400 ticks

Real time constraints

- Initialization time:
 - 10 waypoints: 1 second.
 - 30 waypoints: 3 seconds.
 - 40 waypoints: 4 seconds.
 - 50 waypoints: 5 seconds.
- Cycle response time:
 - 40 milliseconds.
 - Neutral action applied.
 - 120 milliseconds.
 - Disqualification.

Total time: 1
Time left: 549
Waypoints: 0/40



The PTSP Competition

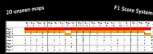
Competition format:

64 Maps
Starter kit
Preliminary submission server
Final evaluation

www.ptsp-game.net

Evaluation:

Scores: 1: number of weapons, 2: time spent
3: games per map, average of best 3



Competitions:

- Bot vs. Bot competition
- Human vs. Human competition
- Human vs. Bot competition



Editions:

- WCC 2012, June, Brisbane, Australia
- 1st workshop
- CIG 2012, September, Granada, Spain
- 1st, 4th, 18 workshops

Competition format:

64 Maps

Starter kit

Preliminary submission server

Final evaluation

www.ptsp-game.net

Evaluation:

Score: 1) number of waypoints; 2) time spent

5 games per map, average of best 3

20 unseen maps

F1 Score System

| | Map 1 | Map 2 | Map 3 | Map 4 | Map 5 | Map 6 | Map 7 | Map 8 | Map 9 | Map 10 | Map 11 | Map 12 | Map 13 | Map 14 | Map 15 | Map 16 | Map 17 | Map 18 | Map 19 | Map 20 | Total |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| Player 1 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 200 |
| Player 2 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 0 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 2 | 146 |
| Player 3 | 6 | 6 | 6 | 0 | 3 | 0 | 5 | 8 | 5 | 6 | 6 | 6 | 6 | 5 | 6 | 5 | 6 | 6 | 5 | 8 | 104 |
| Player 4 | 5 | 4 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 4 | 5 | 5 | 3 | 0 | 6 | 5 | 5 | 0 | 6 | 94 |
| Player 5 | 3 | 5 | 3 | 4 | 4 | 3 | 4 | 5 | 4 | 3 | 5 | 4 | 3 | 6 | 4 | 2 | 4 | 3 | 6 | 5 | 80 |
| Player 6 | 4 | 2 | 2 | 5 | 5 | 5 | 2 | 4 | 3 | 4 | 3 | 3 | 4 | 1 | 5 | 4 | 0 | 0 | 4 | 0 | 60 |
| Player 7 | 2 | 3 | 4 | 3 | 2 | 4 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 3 | 3 | 4 | 0 | 3 | 39 |
| Player 8 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 2 | 1 | 2 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 14 |

Competitions:


- Bot vs. Bot competition
- Human vs. Human competition
- Human vs. Bot competition




Editions:

- WCCI 2012, June, Brisbane, Australia
 - 10 waypoints
- CIG 2012, September, Granada, Spain
 - 30, 40, 50 waypoints

Results

- **Bot competition**
 - **Human competition**
 - **Human vs. Bot competition**
- 

Bot competition

 Played in 20 unseen maps.

 WCCI 2012


 37 submissions, 28 entries, 3 sample controllers

 CIG 2012

 4 submissions, 3 sample controllers

 Winner: Purofvio, MCTS.

Results

- **Bot competition**
 - **Human competition**
 - **Human vs. Bot competition**
- 
- Three orange lines are positioned to the right of the list items. The first line, corresponding to 'Bot competition', is an upward-curving arc. The second line, corresponding to 'Human competition', is a straight horizontal line. The third line, corresponding to 'Human vs. Bot competition', is a downward-curving arc.

Human competition



Played in Starter Kit maps



WCCI 2012



306 players



CIG 2012




12 players



Winner: Slash

Results

- Bot competition
 - Human competition
 - Human vs. Bot competition
- 

Human vs. Bot Competition




Played in Starter Kit maps



WCCI 2012

- $306 + 28 = 334$ participants



- Winner: Slash 



CIG 2012

- $12 + 4 = 16$ participants



- Winner: Purofvio 

The Future

- Game competitions in the community:



- This is brilliant...

- ... but:

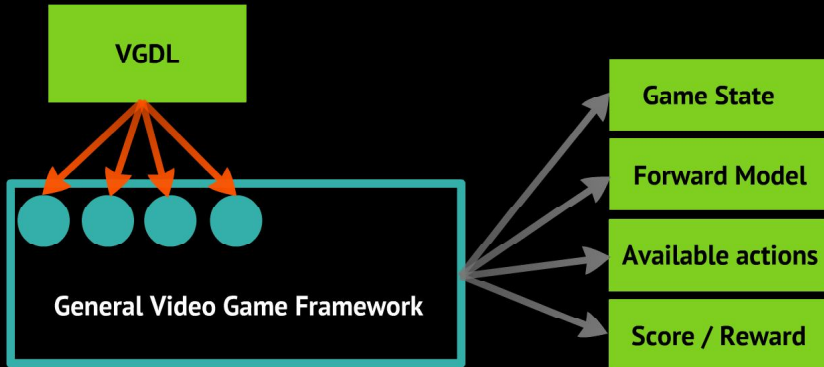


- This is brilliant...
- ... but:
 - Approaches with tons of heuristics: domain-related solutions.
 - One exception: General Game Playing competition: games.stanford.edu
 - What about a General Video Game Playing competition?

VGDL

Game State

- Approaches with tons of heuristics: domain-related solutions.
- One exception: General Game Playing competition: games.stanford.edu
- What about a General Video Game Playing competition?



Aim: competition running in 2013

Thank you for your attention

Q & A