

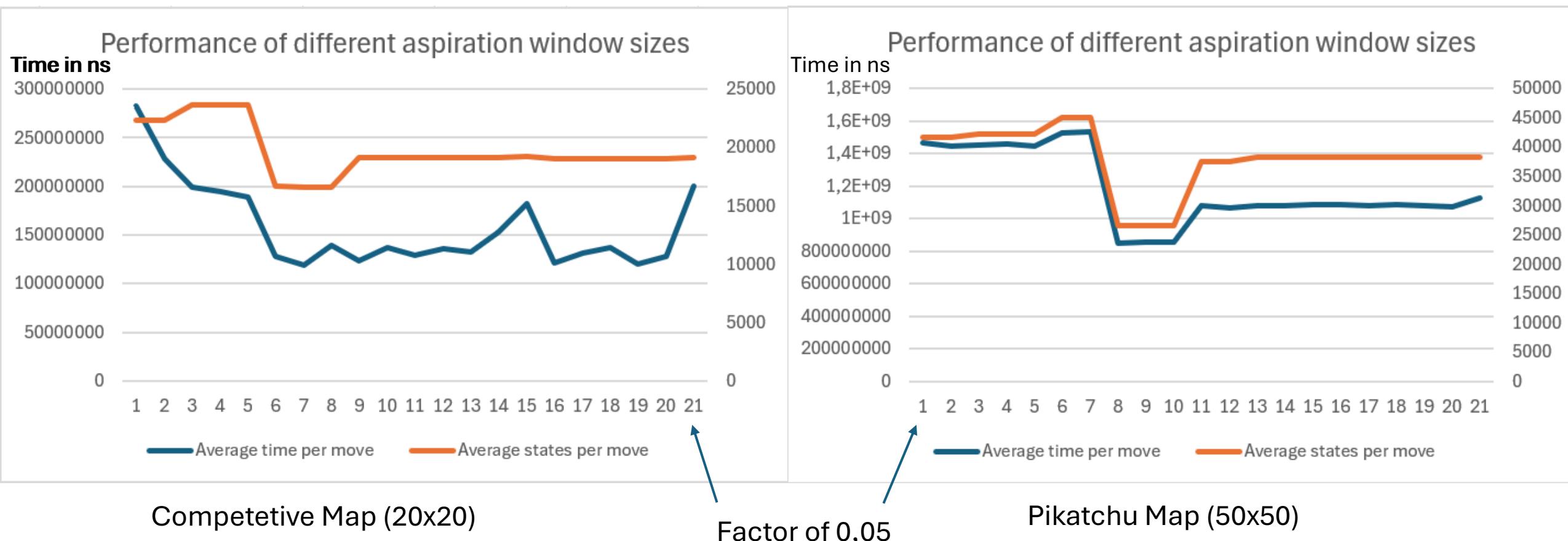
Assignment 5

Group 6

Aspiration Windows implementation

- Double between 0 and 1
- Example: AspirationSize = 0,5; Heuristic score found in previous depth = 100
 - Next Alpha: 50; Next Beta: 150
- For the test:
 - Multiples of 0,05
 - Number of states and computation time measured

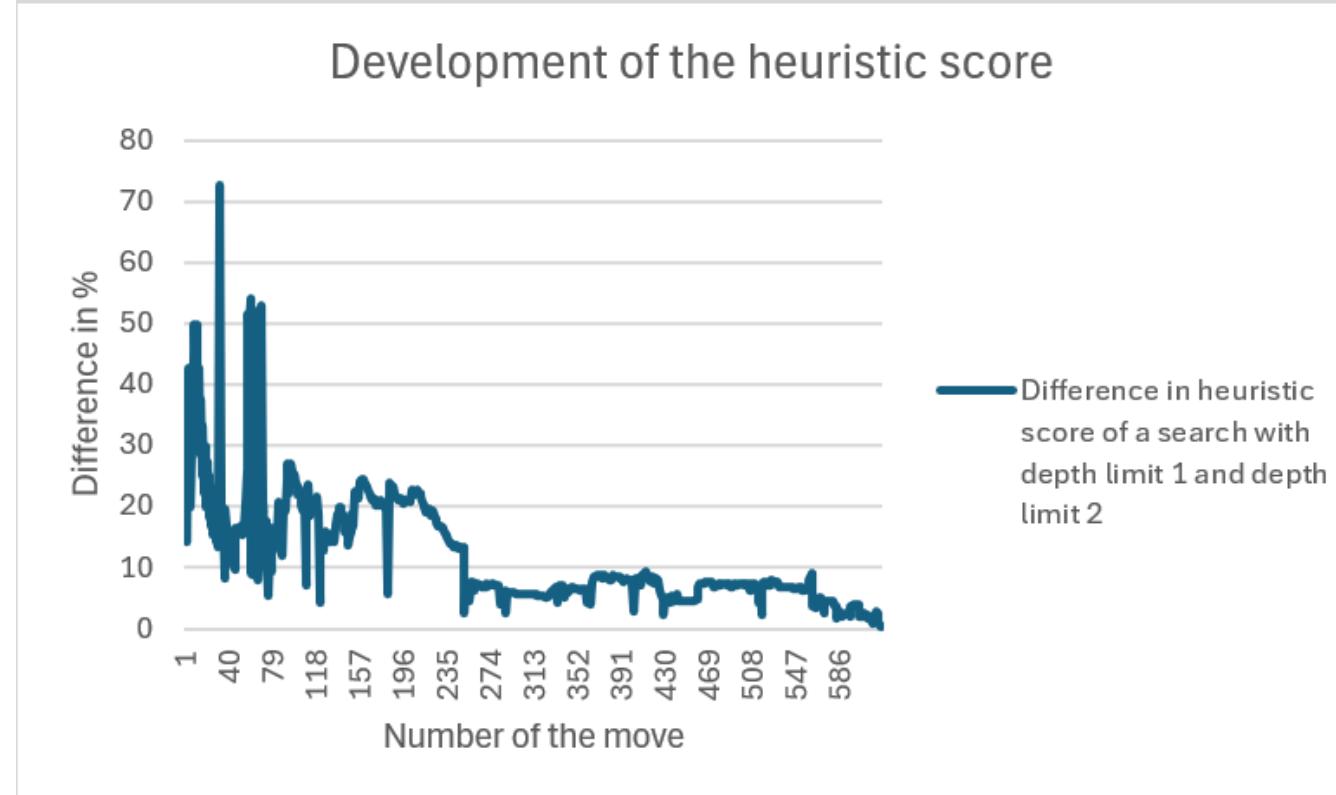
Test results on differently sized maps



- Larger maps had a higher optimal AspirationSize
- $(Width * height / 10000) + 0,275$

Planned improvements

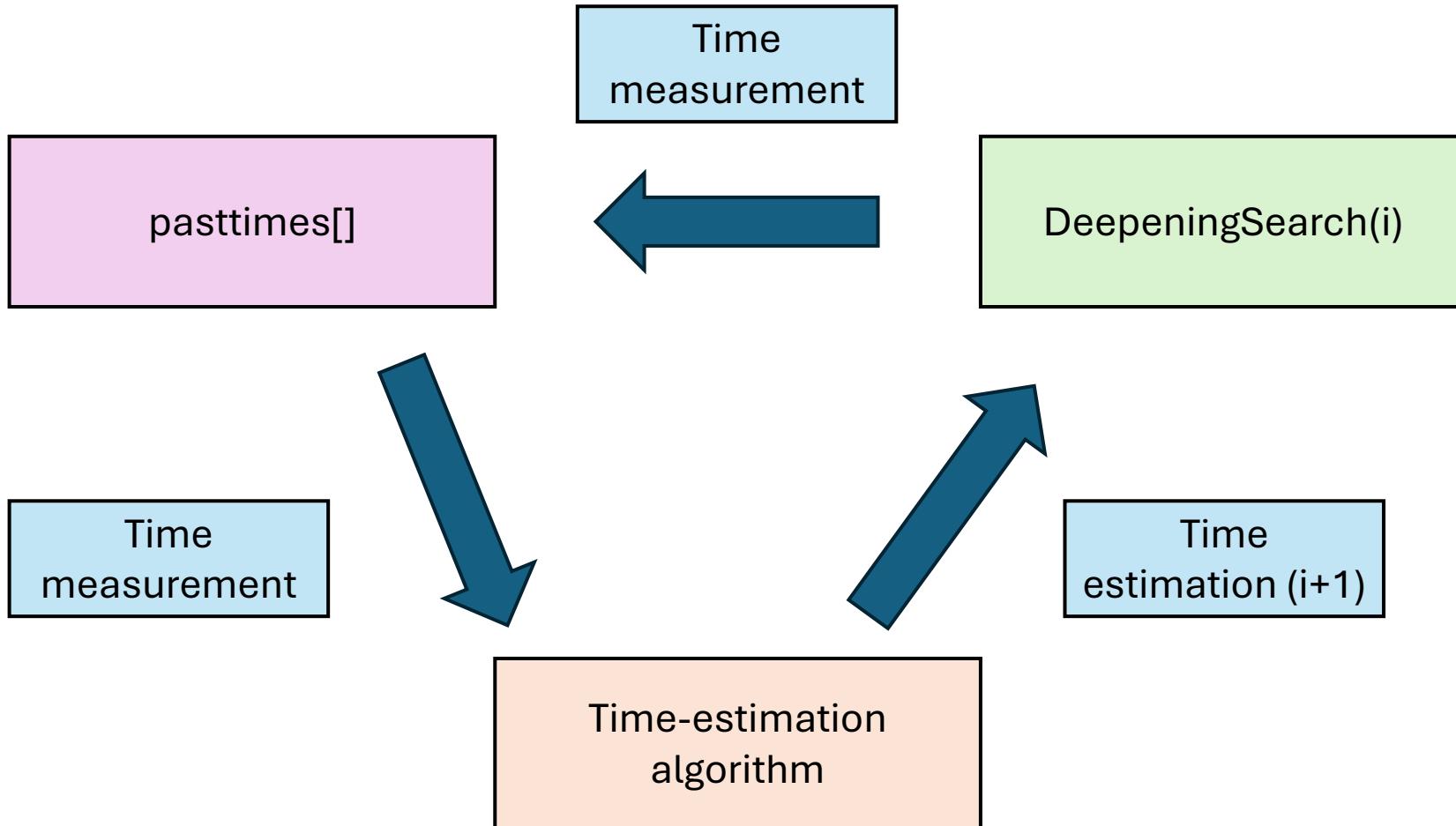
- Chess Map (50x50)
- Optimal constant AspirationSize: 0,55
- Non constant AspirationSize function



Time estimation

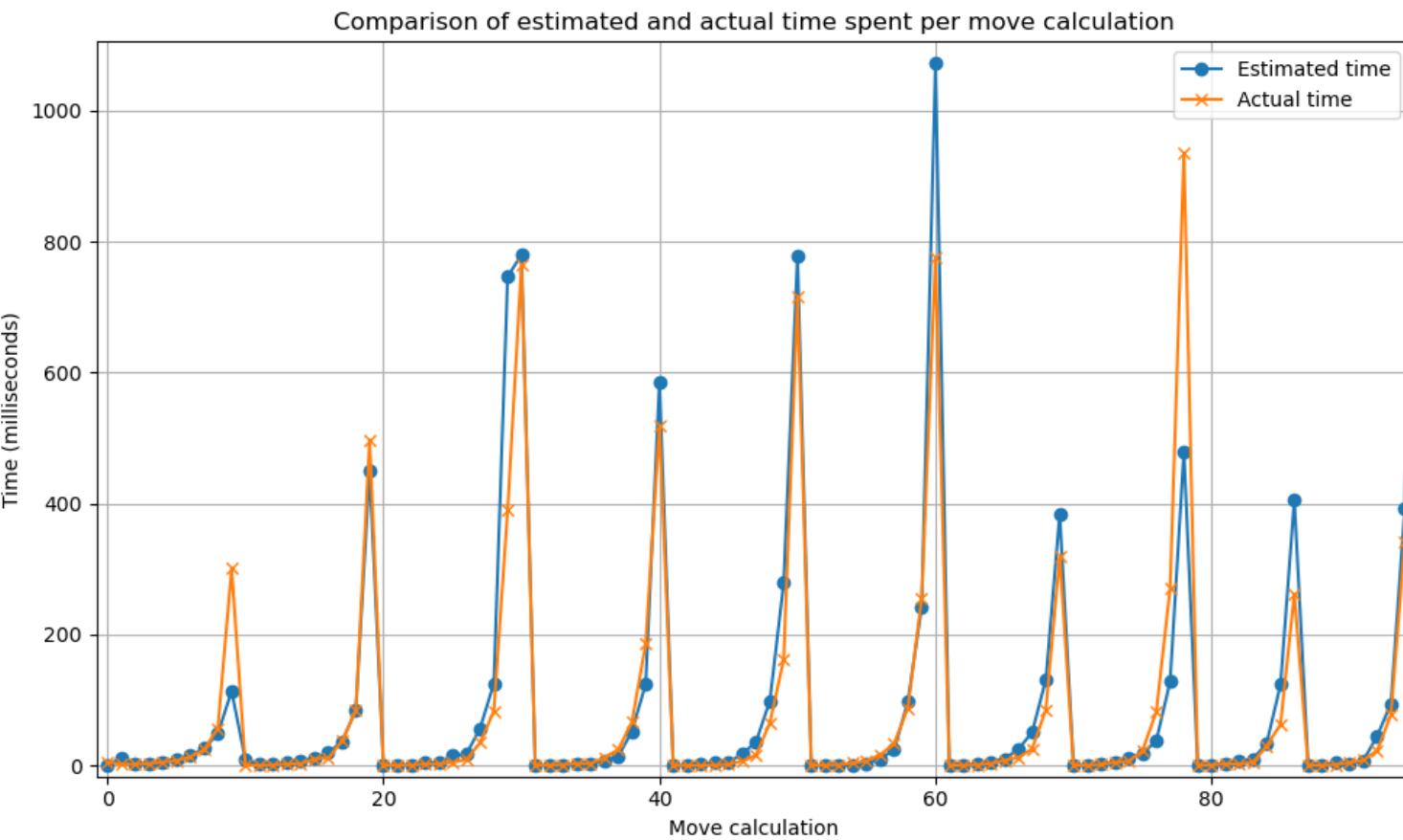
Task 1

Concept



Results

- First move less accurate
- Shape very well matched
- 65% Success rate
- Over/under -estimation tradeoff



Heuristics

parameters

- Total stones
- Side stones
- Corner stones
- "Bonus tiles"
- Number of overrides

Parameters weighted

- Total stones
- Side stones
- Corner stones
- "Bonus tiles"
- Number of overrides

*Weight referenced by color(green, blue, red)(low, middle, high)

Stockpiling overrides

Four player map(14x14)

215	Beate	Move to (2,8), 6236 ms left [override]	4 ms
214	Beate	Move to (1,14), 4240 ms left [override]	111 ms
213	Beate	Move to (0,3), 2351 ms left [override]	149 ms
212	Group 4	Move to (0,4), 100 ms left [override]	2000 ms
211	Beate	Move to (0,1), 500 ms left [override]	4581 ms
210	Group 4	Move to (10,14), 100 ms left [override]	2000 ms
209	Beate	Move to (14,13), 3081 ms left [override]	2141 ms
208	Group 4	Move to (5,2), 100 ms left [override]	2000 ms
207	Beate	Move to (0,13), 3222 ms left [override]	2551 ms
206	Group 4	Move to (4,12), 100 ms left [override]	2000 ms
205	Beate	Move to (1,0), 3773 ms left [override]	2971 ms
204	Group 4	Move to (12,5), 100 ms left [override]	2000 ms
203	Beate	Move to (14,1), 4744 ms left [override]	3546 ms
202	Group 4	Move to (2,8), 100 ms left [override]	3485 ms
201	Beate	Move to (13,0), 6290 ms left [override]	293 ms
200	Group 4	Move to (14,10), 1585 ms left [override]	5791 ms
199	Beate	Move to (1,14), 4583 ms left [override]	328 ms
198	Group 4	Move to (11,1), 2020 ms left	167 ms

-> game state before this happens loses significance.

Inversions/ swaps

- Relative player number

Results

Results pre improvement

	Disq.	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
2 Player Map	0x	3x	13x						
3 Player Map	0x	0x	8x	4x					
4 Player Map	0x	1x	5x	7x	7x				
5 Player Map	0x	0x	0x	1x	2x	2x			
6 Player Map	0x	0x	1x	2x	3x	0x	0x		
7 Player Map	0x	0x	0x	0x	0x	0x	0x	0x	
8 Player Map	0x	0x	5x	6x	9x	5x	13x	15x	3x

Results after improvement

	Disq.	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
2 Player Map	0x	5x	11x						
3 Player Map	0x	3x	6x	3x					
4 Player Map	0x	2x	2x	5x	11x				
5 Player Map	0x	1x	0x	1x	0x	3x			
6 Player Map	0x	1x	1x	1x	1x	1x	1x		
7 Player Map	0x	0x	0x	0x	0x	0x	0x	0x	
8 Player Map	0x	6x	9x	6x	12x	6x	12x	4x	1x

-> results especially in games with higher numbers of players improved significantly.