

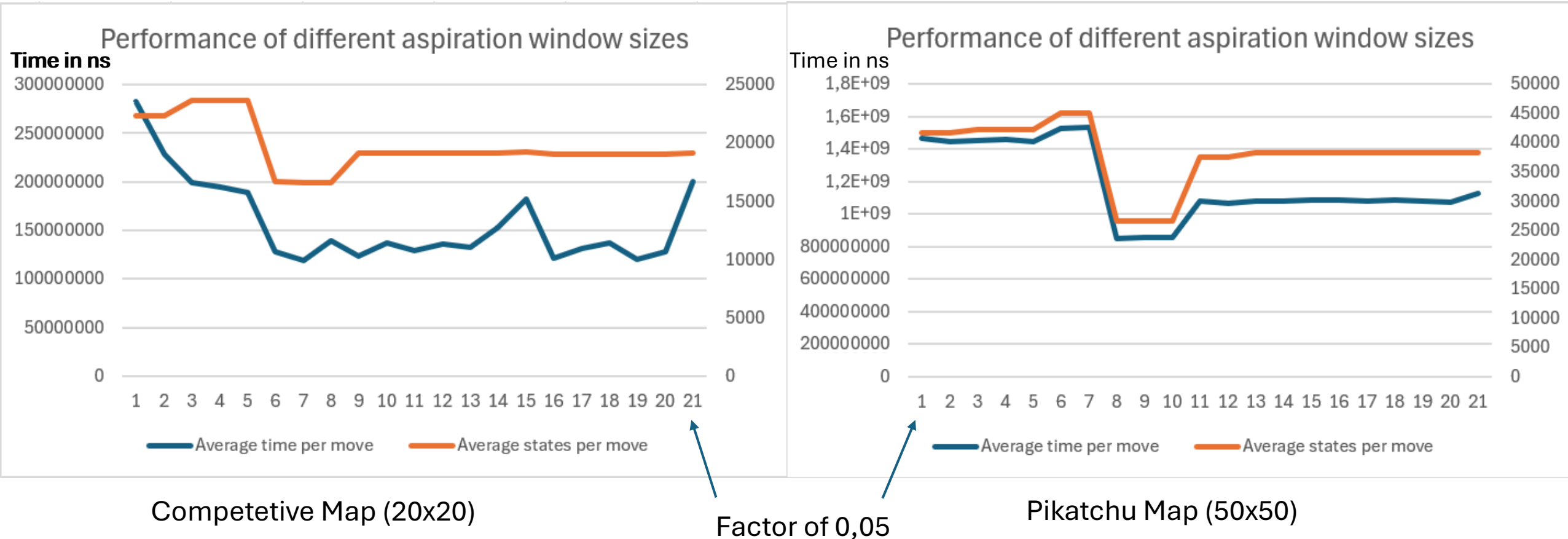
# Assignment 5

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

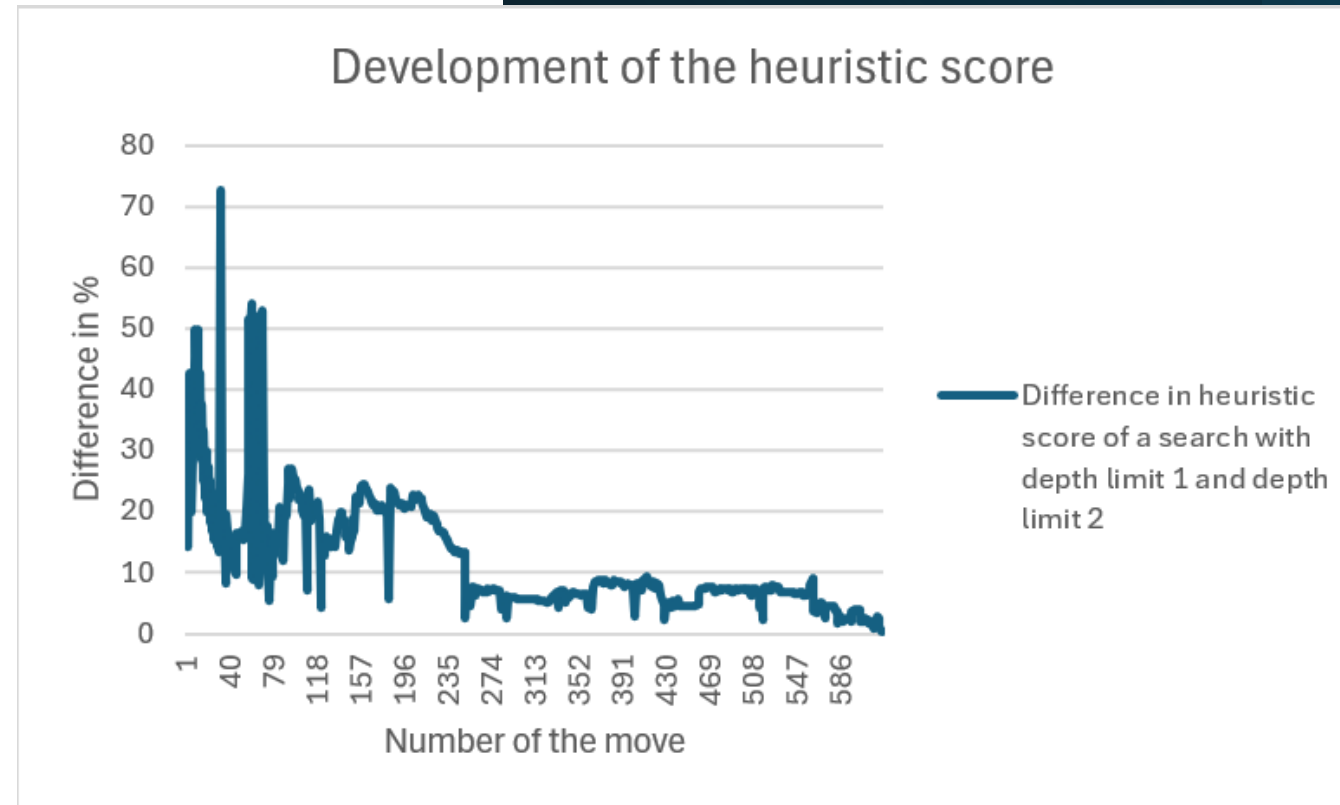
# Test results on differently sized maps



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

# Planned improvements

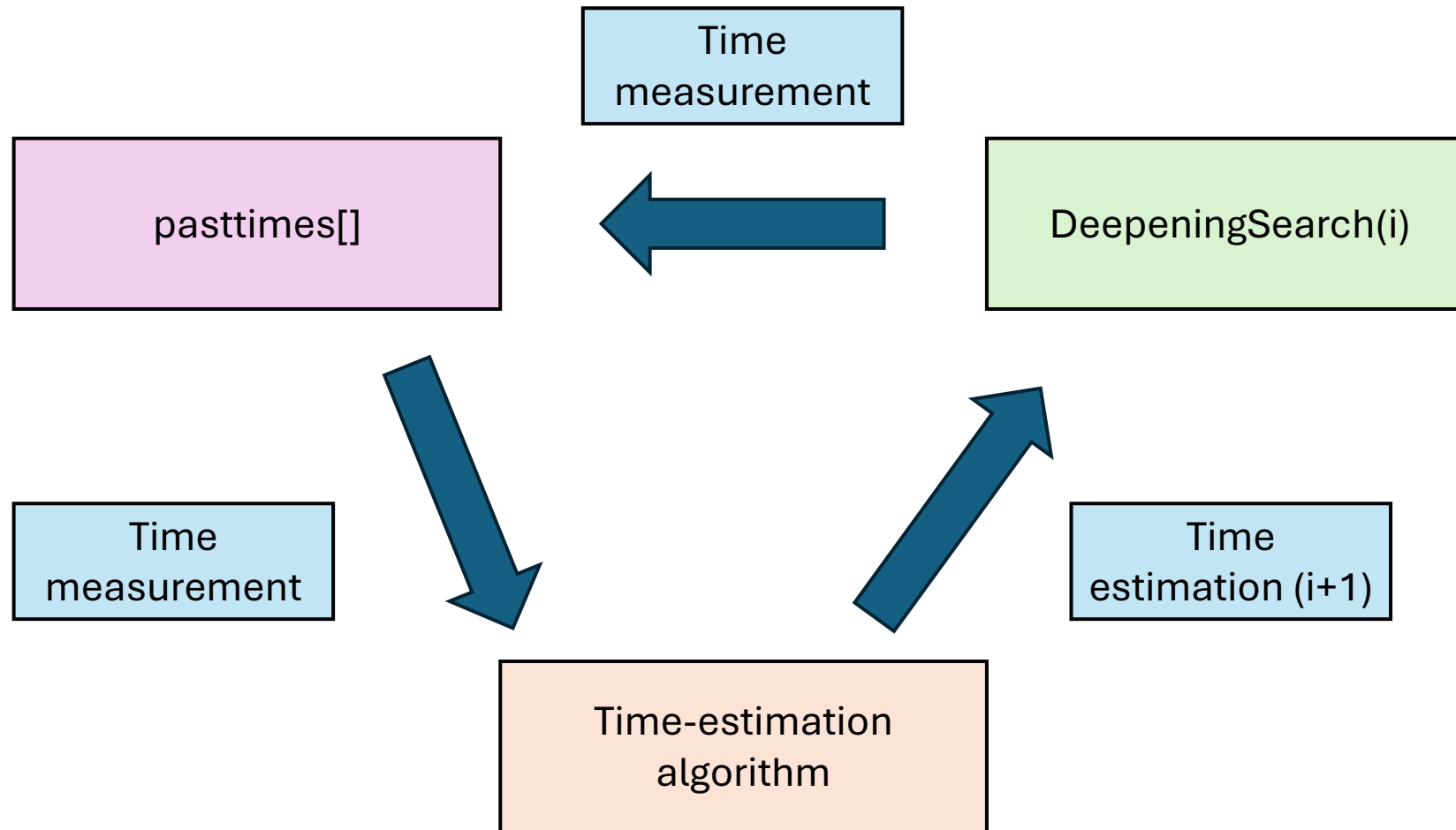
- Chess Map (50x50)
- Optimal constant AspirationSize: 0,55
- Non constant AspirationSize function



# Time estimation

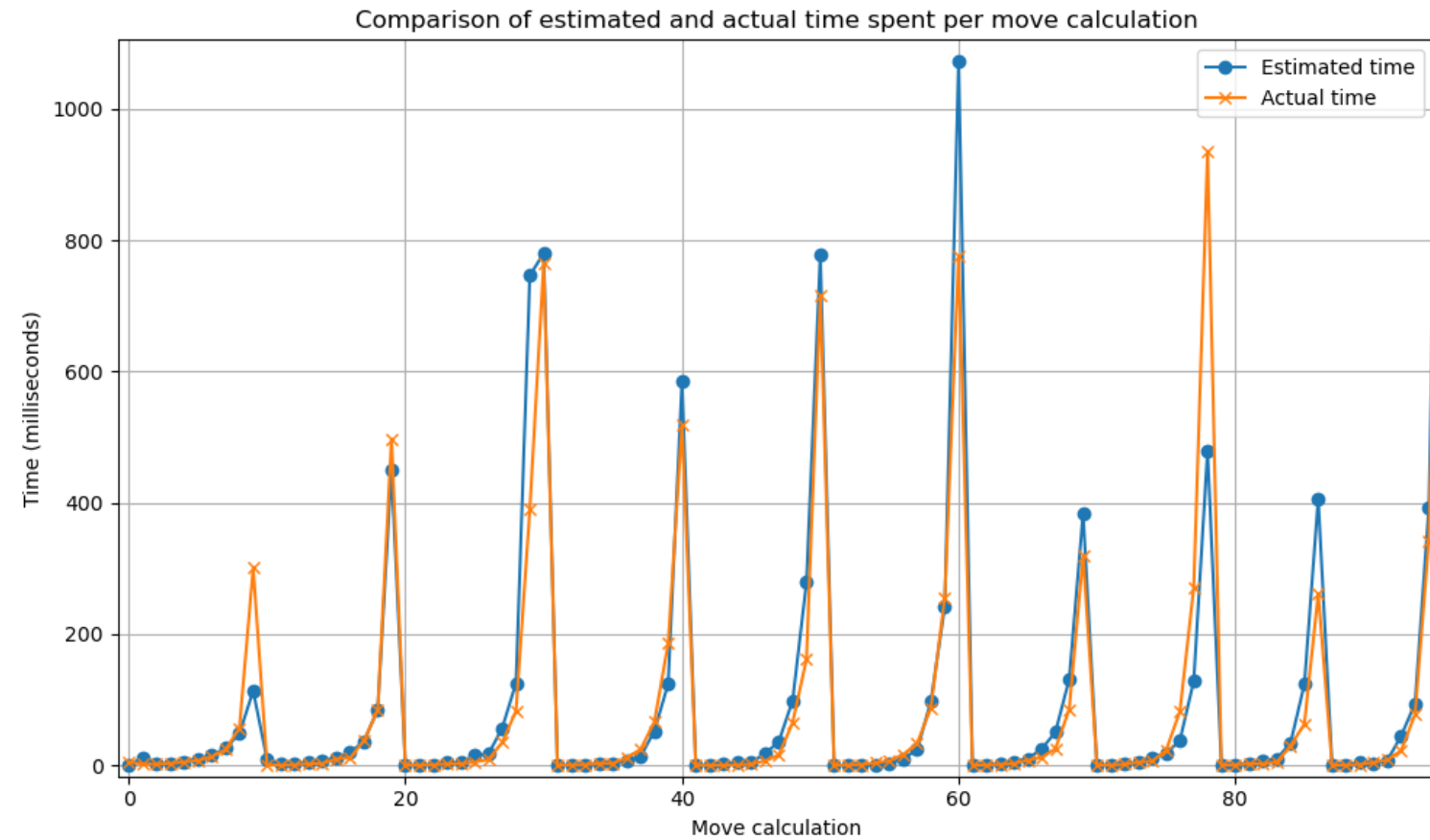
## Task 1

# 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 5	Move to (11,1), 9020 ms left [override]	167 ms

-> game state before this happens loses significance.

# Inversions/ swaps

- Relative player number

# Results

Results pre improvement

	Disq.	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>
2 Player Map	0×	3×	13×						
3 Player Map	0×	0×	8×	4×					
4 Player Map	0×	1×	5×	7×	7×				
5 Player Map	0×	0×	0×	1×	2×	2×			
6 Player Map	0×	0×	1×	2×	3×	0×	0×		
7 Player Map	0×	0×	0×	0×	0×	0×	0×	0×	
8 Player Map	0×	0×	5×	6×	9×	5×	13×	15×	3×

Results after improvement

	Disq.	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>
2 Player Map	0×	5×	11×						
3 Player Map	0×	3×	6×	3×					
4 Player Map	0×	2×	2×	5×	11×				
5 Player Map	0×	1×	0×	1×	0×	3×			
6 Player Map	0×	1×	1×	1×	1×	1×	1×		
7 Player Map	0×	0×	0×	0×	0×	0×	0×	0×	
8 Player Map	0×	6×	9×	6×	12×	6×	12×	4×	1×

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