



GPU Accelerated Maze route with BidirectionaL Expansion

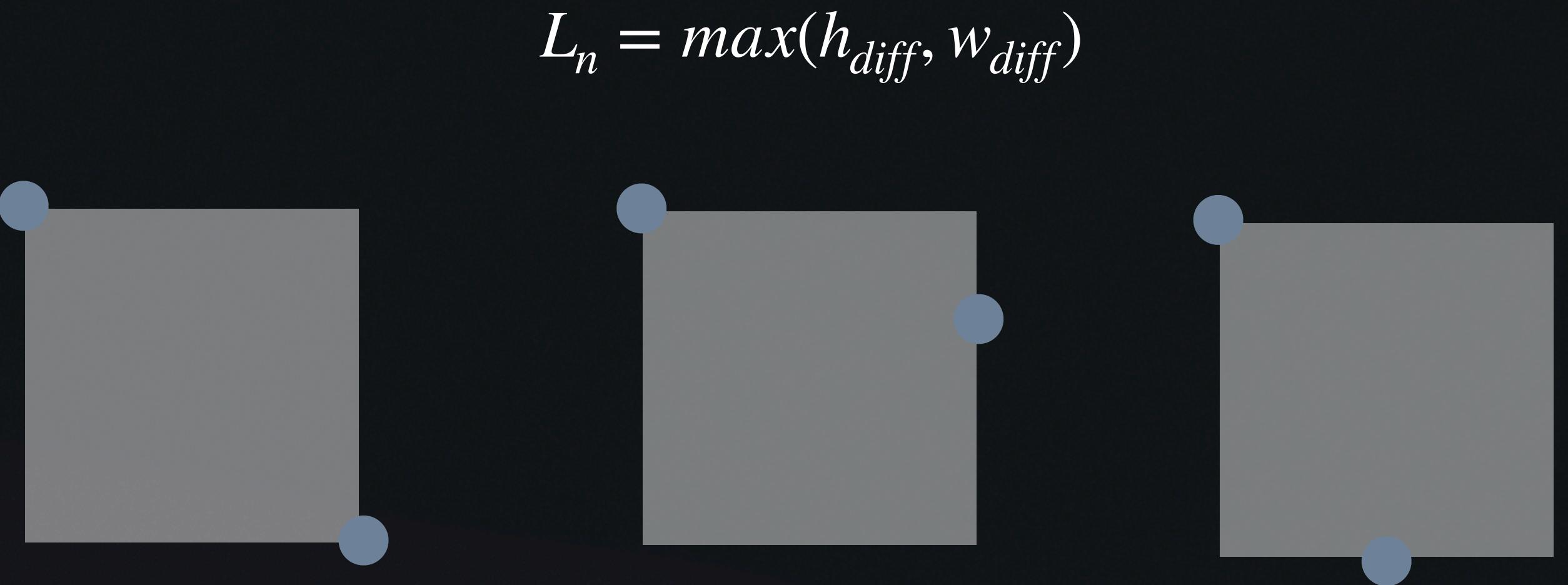
Jingren Wang, 19th, Nov, 2025

What

What has been proposed

- **A square based**

- Partitioned
- Bidirectional

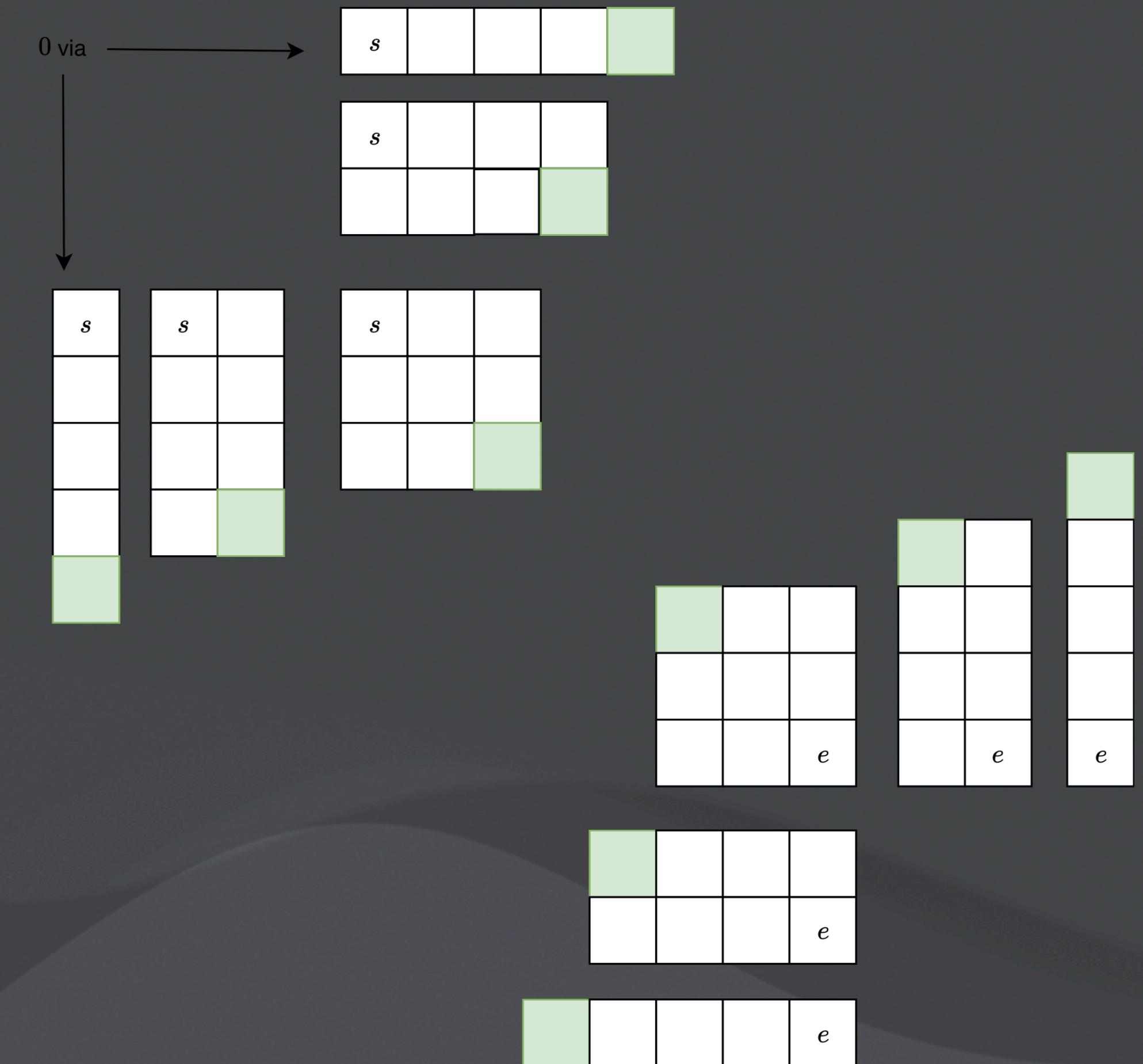
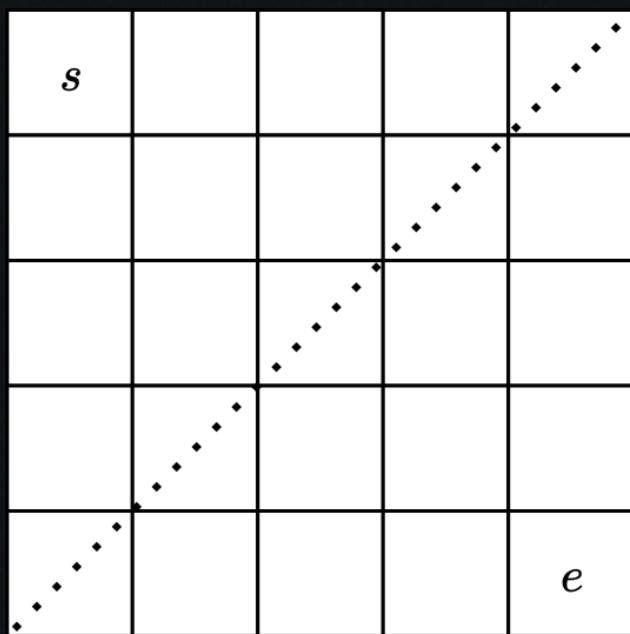


*Q: What if it exceeds the boundaries?

What

What has been proposed

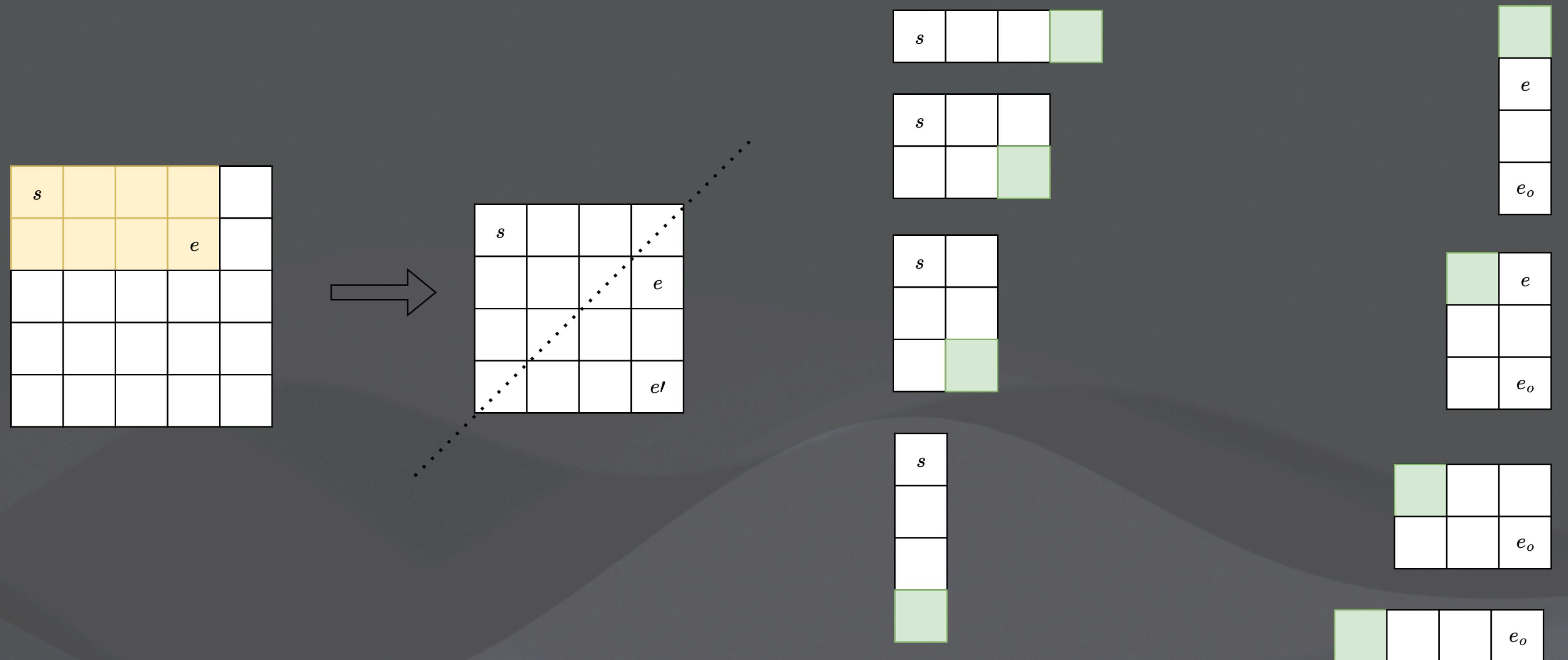
- A square based
- **Partitioned**
- Bidirectional



What

What has been proposed

- A square based
- **Partitioned**
- Bidirectional



*Q: What's the potential problem? How many situations are there?

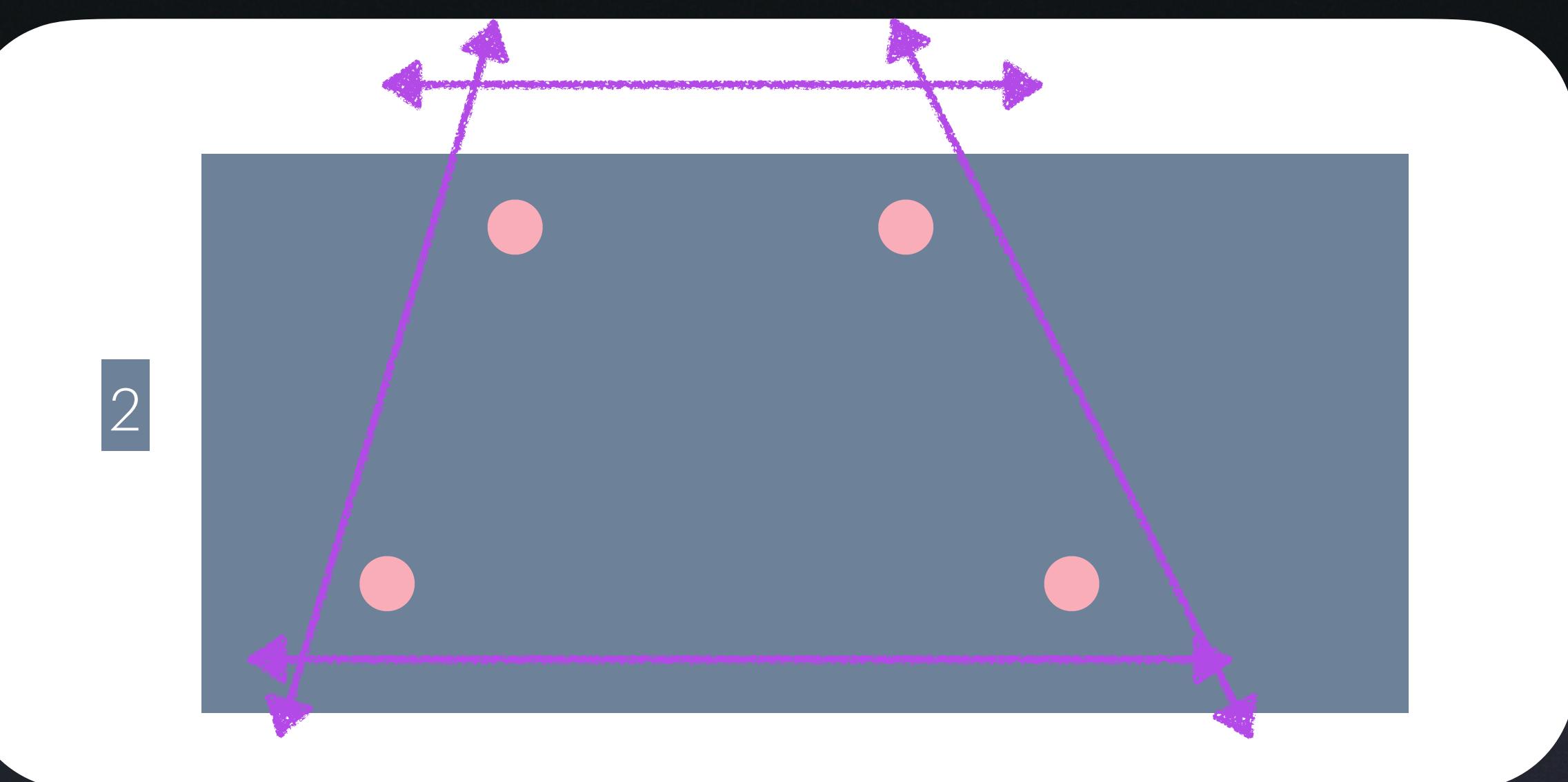
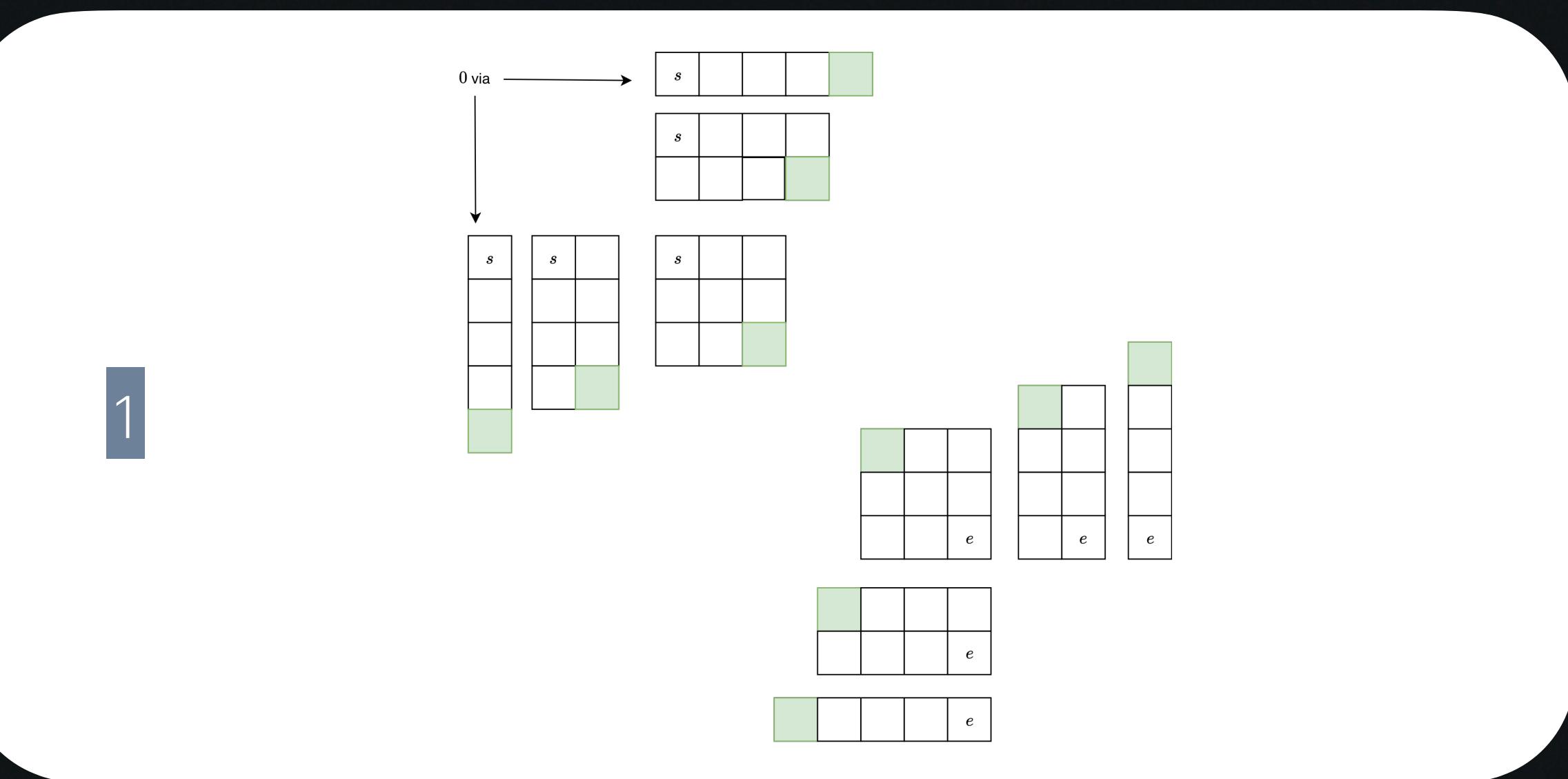
Jingren Wang, MICS

What

What has been proposed

- A square based
- Partitioned
- **Bidirectional**

*Logically a pair of nodes should be
normalised to simplify the process.



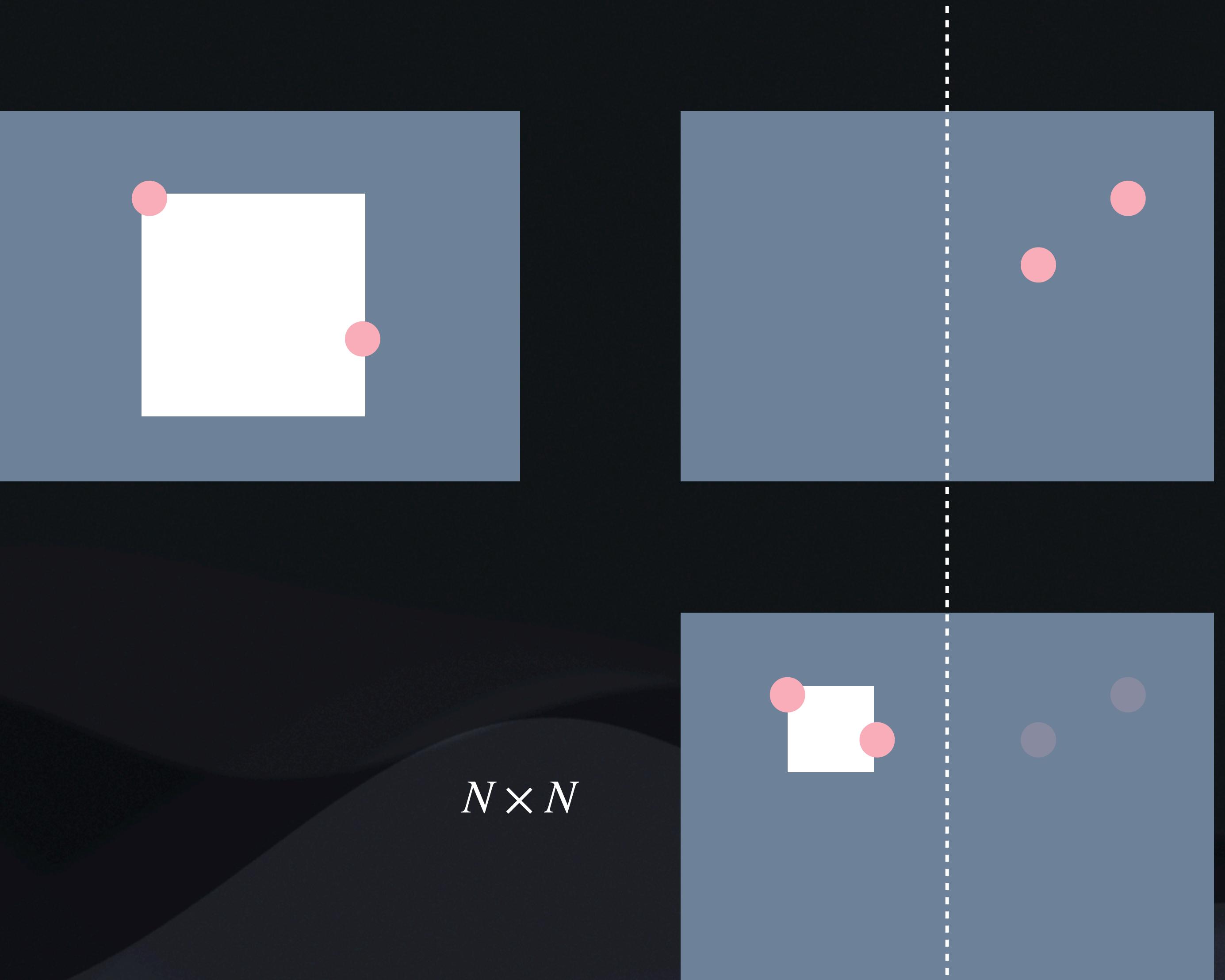
What

What has been proposed

- A square based
- Partitioned
- **Bidirectional**

*A pair of nodes should be **normalised** to simplify the process.

*Q: Should we care about node order?

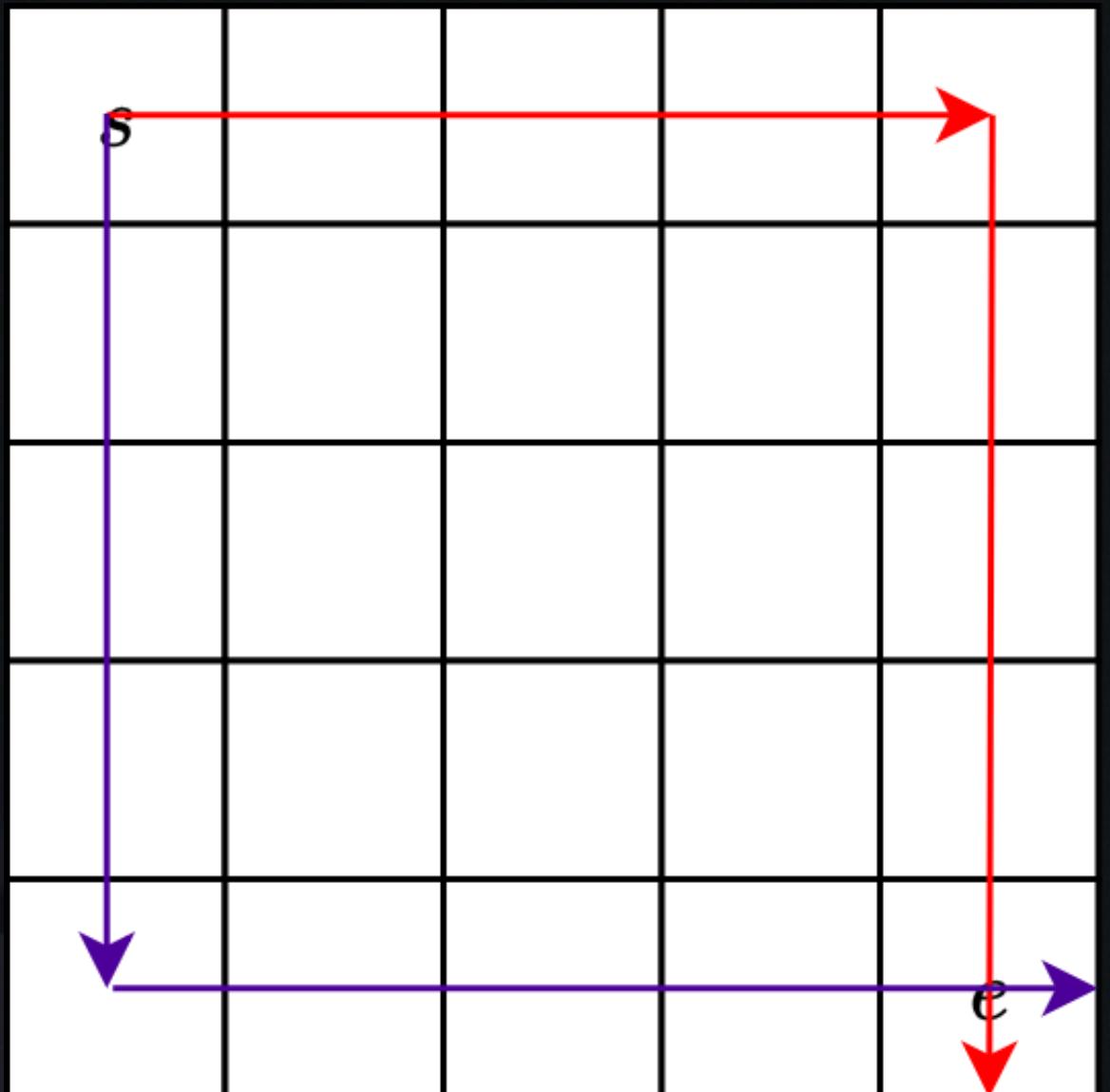


Util

Trivial situation

*Q: *What if vias are too large for a small partition to bear?
Do we even need to consider different solutions?*

*Q: *What kind of square of cost especially favour this situation?*



Util

Unconnected pins inside

*Q: *Will this have the possibility to have multiple results to consider? Somehow increase the chance of parallelism?*

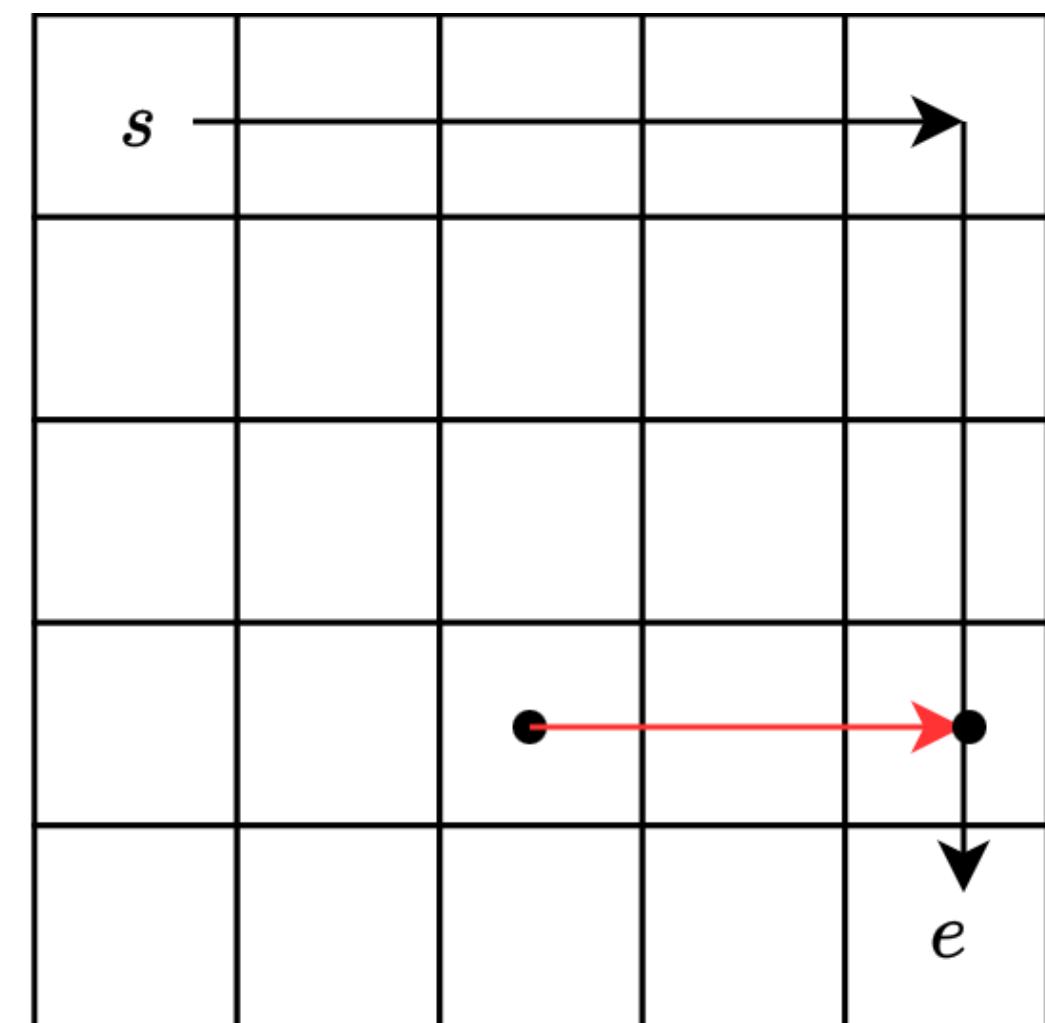
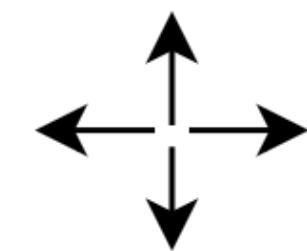
3	6	7	5
5	6	2	9
2	7	0	9
6	0	6	2

139

3	6	7	5
5	6	2	9
2	7	0	9
6	0	6	2

138

Jingren Wang, MICS



Simplest version of dealing with unconnected ones



THE HONG KONG
UNIVERSITY OF SCIENCE AND
TECHNOLOGY (GUANGZHOU)

Status

Achieved and Future Plan

- Processing: Pair by pair. (Maybe euclidean distance/density/heatmap?)
- Cases: Consider simple cases. (Ignore wired block for now 😐)
- Use native Dijkstra for the unconnected ones at the end on whole cost matrix.

✓ Provide cases test progress. #14

Open



wjrforcyber opened 2 days ago · edited by wjrforcyber

- Case1.
- Case2.
- Case3.
- Case4.
- Case5.
- Case6.
- Case7.
- Case8.
- Case9.
- Case10.
- Case11.
- Case12. (Manually stopped since runtime exceeds 7 hours)
- Case13. (Manually stopped since runtime exceeds 7 hours)

Create sub-issue



wjrforcyber self-assigned this 2 days ago

wjrforcyber added enhancement CourseWork(Urgent!) 2 days ago

Thank you!



Jingren Wang, MICS



THE HONG KONG
UNIVERSITY OF SCIENCE AND
TECHNOLOGY (GUANGZHOU)