Implementation discussion

Cartesian/polar duplicated coordinates experiment

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August 30, 2024

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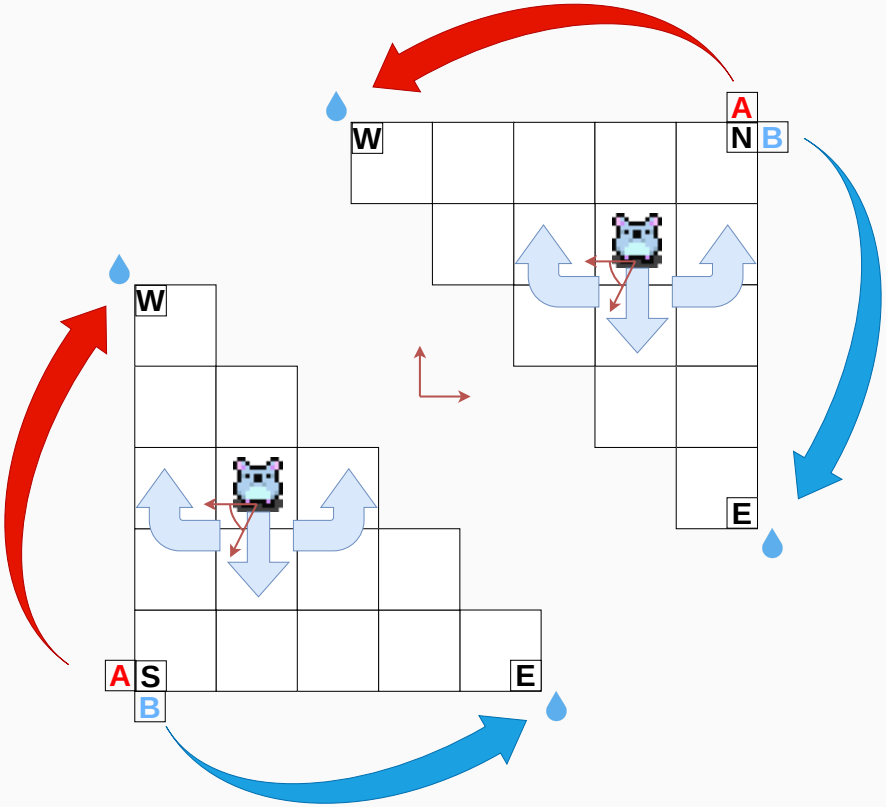
Status

- Environment: done
  - Main class with origin (0,0) at the center of the environment
  - Subclass that converts the coordinates of the agent to North & South ports in Cartesian and polar coordinates
  - 44 unit tests to check that the code does what it's supposed to do and that the agent is where it's supposed to be
- Visualization: WIP
- Training: to-do

Should there be a backward action?

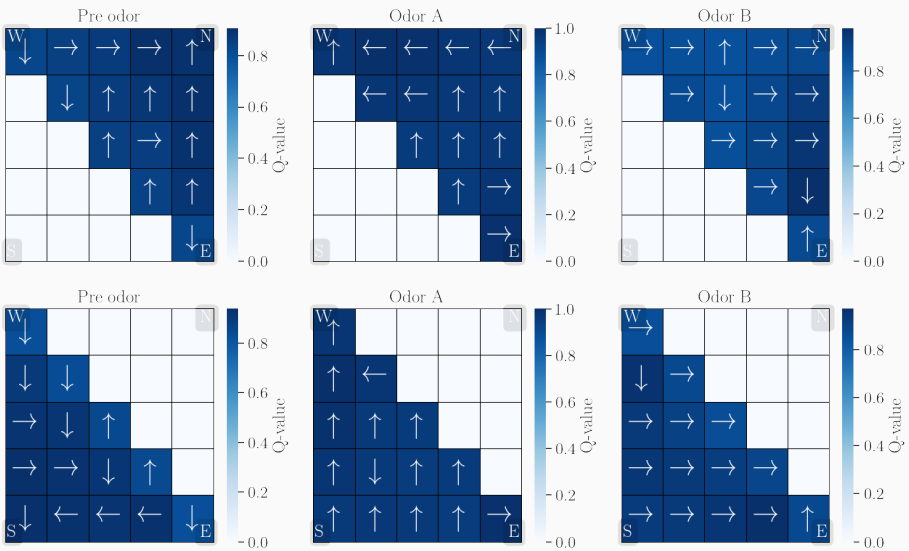


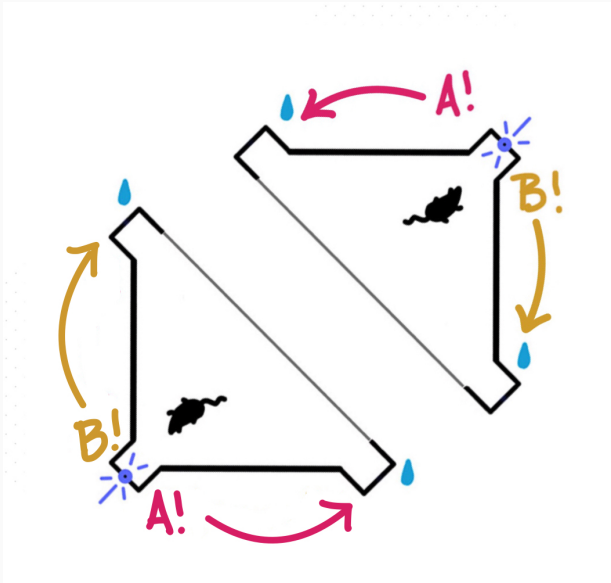
What should be part of the state?

```
state = TensorDict(
    {
        "cue": torch.tensor(Cues.NoOdor.value, device=DEVICE).
    unsqueeze(-1),
        "x": torch.tensor([x], device=DEVICE),
        "y": torch.tensor([y], device=DEVICE),
        "direction": torch.tensor([direction], device=DEVICE),
    },
    batch_size=[1],
    device=DEVICE,
)
```

→ Should head direction be part of the state?

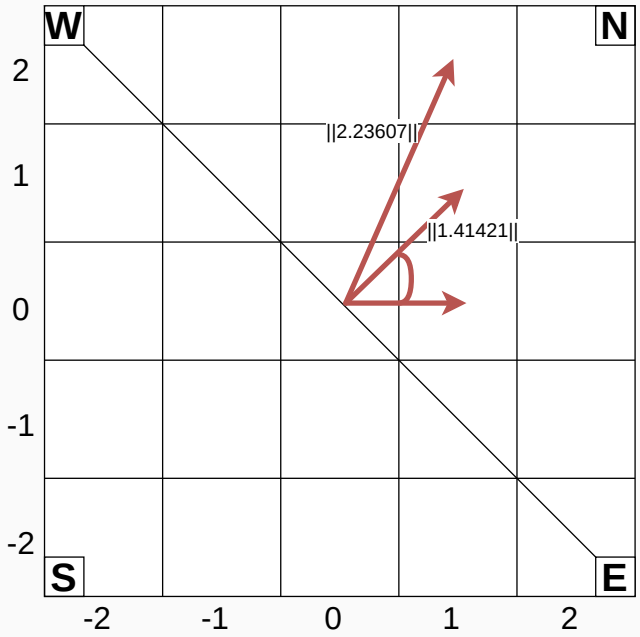
Tiles on the diagonal

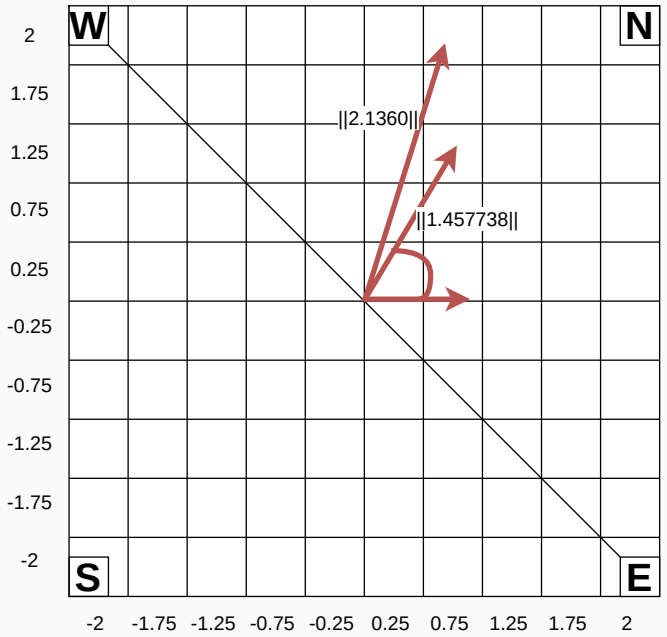




Length rounding in polar coordinates?

- For step 1 tiles
- For step 0.5 tiles





Which architecture for the network?

- 2 tasks (East/West & Left/Right)
- upper/lower triangle
- 4 head directions
- 5 discretized x coordinates (Cartesian)
- 5 discretized y coordinates (Cartesian)
- 360 discretized angles (polar)
- 50 discretized lengths (polar)

Thanks!