env_observation:

Observation(events=Events(collisions=[], off_route=False, reached_goal=False, reached_max_episode_steps=False, off_road=False, wrong_way=False, not_moving=False), ego_vehicle_state=EgoVehicleObservation(id='000-cdbd47d3', position=array([101.6 , 76.31, 0.]), bounding_box=BoundingBox(length=3.68, width=1.47, height=1.0), heading=Heading(0.0), speed=13.89, steering=-0.0, yaw_rate=array([0., 0., 0.]), edge_id='edge-south-SN', lane_id='edge-south-SN_0', lane_index=0, mission=Mission(start=Start(position=(101.6, 78.15), heading=Heading(0.0)), goal=PositionalGoal(position=(15.790021303286835, 101.53272255489955), radius=2), route_vias=(), start_time=15, entry_tactic=TrapEntryTactic(wait_to_hijack_limit_s=10, zone=MapZone(start=('edge-south-SN', 0, 121), length=10, n_lanes=1), exclusion_prefixes=[], default_entry_speed=None), task=None, via=()), linear_velocity=array([1.38900000e+01, 8.50517202e-16, 0.00000000e+00]), angular_velocity=array([0., 0., 0.]), linear_acceleration=0.0, angular_acceleration=0.0, linear_jerk=0.0, angular_jerk=0.0),

neighborhood_vehicle_states=[

VehicleObservation(id='default-flow-route-edge-east-EW_0_base-edge-south-NS_0_max-2819005022155139205--403512317619860106--2200-0.0', position=array([98.4 , -14.89406343, 0.]), bounding_box=BoundingBox(length=3.68, width=1.47, height=1.4), heading=Heading(3.141592653589793), speed=13.01640041045209, edge_id='edge-south-NS', lane_id='edge-south-NS_0', lane_index=0),

VehicleObservation(id='blocker-flow-route-edge-east-EW_0_base-edge-south-NS_0_max-2819005022155139205---3309283624282190849--2201-0.0', position=array([219.64423097, 101.6 , 0.]), bounding_box=BoundingBox(length=3.68, width=1.47, height=1.4), heading=Heading(1.5707963267948966), speed=3.3931318586007335, edge_id='edge-east-EW', lane_id='edge-east-EW_0', lane_index=0),

VehicleObservation(id='default-flow-route-edge-west-WE_1_base-edge-south-NS_0_max-4007202995518783708--403512317619860106--2300-0.0', position=array([98.4 , 36.76325803, 0.]), bounding_box=BoundingBox(length=3.68, width=1.47, height=1.4), heading=Heading(3.141592653589793), speed=13.69917414511704, edge_id='edge-south-NS', lane_id='edge-south-NS_0', lane_index=0),

VehicleObservation(id='default-flow-route-edge-east-EW_0_base-edge-west-EW_0_max-7899514526965050022--403512317619860106--1200-0.0', position=array([231.26555124, 101.6 , 0.]), bounding_box=BoundingBox(length=3.68, width=1.47, height=1.4), heading=Heading(1.5707963267948966), speed=3.56367860334545, edge_id='edge-east-EW', lane_id='edge-east-EW_0', lane_index=0),

VehicleObservation(id='default-flow-route-edge-east-EW_0_base-edge-west-EW_0_max-7899514526965050022--403512317619860106--1201-0.0', position=array([242.94977258, 101.6 , 0.]), bounding_box=BoundingBox(length=3.68, width=1.47, height=1.4), heading=Heading(1.5707963267948966), speed=3.367706813594497, edge_id='edge-east-EW', lane_id='edge-east-EW_0', lane_index=0),

VehicleObservation(id='cautious-flow-route-edge-west-WE_1_base-edge-east-WE_0_max-6495907845598421757---149643225998916123--200-0.0', position=array([-65.8357367 , 95.07200258, 0.]), bounding_box=BoundingBox(length=3.68, width=1.47, height=1.4), heading=Heading(-1.5700525006898856), speed=4.371640324540314, edge_id='edge-west-WE', lane_id='edge-west-WE_0', lane_index=0),

VehicleObservation(id='default-flow-route-edge-south-SN_0_base-edge-west-EW_0_max--5931742992176896262--403512317619860106--0-0.0', position=array([101.6 , 32.0051405, 0.]), bounding_box=BoundingBox(length=3.68, width=1.47, height=1.4), heading=Heading(0.0), speed=13.275131165699944, edge_id='edge-south-SN', lane_id='edge-south-SN_0', lane_index=0),

VehicleObservation(id='default-flow-route-edge-south-SN_0_base-edge-east-WE_0_max--6685256817915462752--403512317619860106--100-0.0', position=array([101.6 , -36.63402387, 0.]), bounding_box=BoundingBox(length=3.68, width=1.47, height=1.4), heading=Heading(0.0), speed=3.969205192160988, edge_id='edge-south-SN', lane_id='edge-south-SN_0', lane_index=0)

],

waypoint_paths=[[Waypoint(pos=array([101.6 , 76.31]), heading=Heading(0.0), lane_width=3.2, speed_limit=13.89, lane_id='edge-south-SN_0', lane_index=0), Waypoint(pos=array([101.6 , 77.23843657]), heading=Heading(0.0), lane_width=3.2, speed_limit=13.89, lane_id='edge-south-SN_0', lane_index=0), Waypoint(pos=array([101.6 , 78.16687314]), heading=Heading(0.0), lane_width=3.2, speed_limit=13.89, lane_id='edge-south-SN_0', lane_index=0), Waypoint(pos=array([101.6 , 79.09530971]), heading=Heading(0.0), lane_width=3.2, speed_limit=13.89, lane_id='edge-south-SN_0', lane_index=0), Waypoint(pos=array([101.6 , 80.02374628]), heading=Heading(0.0), lane_width=3.2, speed_limit=13.89, lane_id='edge-south-SN_0', lane_index=0), Waypoint(pos=array([101.6 , 80.95218284]), heading=Heading(0.0), lane_width=3.2, speed_limit=13.89, lane_id='edge-south-SN_0', lane_index=0), Waypoint(pos=array([101.6 , 81.88061941]), heading=Heading(0.0), lane_width=3.2, speed_limit=13.89, lane_id='edge-south-SN_0', lane_index=0), Waypoint(pos=array([101.6 , 82.80905598]), heading=Heading(0.0), lane_width=3.2, speed_limit=13.89, lane_id='edge-south-SN_0', lane_index=0), Waypoint(pos=array([101.6 , 83.73749255]), heading=Heading(0.0), lane_width=3.2, speed_limit=13.89, lane_id='edge-south-SN_0', lane_index=0), Waypoint(pos=array([101.6 , 84.66592912]), heading=Heading(0.0), lane_width=3.2, speed_limit=13.89, lane_id='edge-south-SN_0', lane_index=0), Waypoint(pos=array([101.6 , 85.59436569]), heading=Heading(0.0), lane_width=3.2, speed_limit=13.89, lane_id='edge-south-SN_0', lane_index=0), Waypoint(pos=array([101.6 , 86.52280226]), heading=Heading(0.0), lane_width=3.2, speed_limit=13.89, lane_id='edge-south-SN_0', lane_index=0), Waypoint(pos=array([101.6 , 87.45123883]), heading=Heading(0.0),

```
state in adapter: {
            ‘low_dim_states': array([ 0.463     ,  0.        , -0.        ,  0.        , -0.85809976,
                        0.25222722,  0.        ,  0.        ,  0.        ,  0.09284366,
                        0.        ,  0.18568732,  0.        ,  0.278531  ,  0.        ,
                        0.37137464,  0.        ,  0.4642183 ,  0.        ,  0.557062  ,
                        0.        ,  0.6499056 ,  0.        ,  0.7427493 ,  0.        ,
                        0.8355929 ,  0.        ,  0.9284366 ,  0.        ,  1.0212802 ,
                        0.        ,  1.114124  ,  0.        ,  1.2069676 ,  0.        ,
                        1.2998112 , -0.00664722,  1.3923068 , -0.0163425 ,  1.4846429 ,
                        -0.02603779,  1.5769789 , -0.03573307,  1.669315  , -0.04539606,
                        1.7616544 ,  0.463     ], dtype=float32),
            'social_vehicles': array([[-0.032     , -0.39546743,  1.0005072 ,  0.45663914],    # 1
                        [ 0.        , -0.4430486 ,  0.        ,  0.44250438],# 2
                        [-0.032     , -0.91204065,  1.0005072 ,  0.43388   ],# 3
                        [ 0.        , -1.1294402 ,  0.        ,  0.13230684],# 4
                        [ 1.1804423 ,  0.2529    ,  0.5002536 ,  0.1131044 ],# 5
                        [ 1.2966555 ,  0.2529    ,  0.5002536 ,  0.11878929],# 6
                        [ 1.4134977 ,  0.2529    ,  0.5002536 ,  0.11225689],# 7
                        [-1.6743574 ,  0.18762003, -0.50001675,  0.14572135]],     # 8
                        dtype=float32)
      }
final state in adapter: {
      'low_dim_states': array([ 0.463     ,  0.        , -0.        ,  0.        , -0.85809976,
                  0.25222722,  0.        ,  0.        ,  0.        ,  0.09284366,
                  0.        ,  0.18568732,  0.        ,  0.278531  ,  0.        ,
                  0.37137464,  0.        ,  0.4642183 ,  0.        ,  0.557062  ,
                  0.        ,  0.6499056 ,  0.        ,  0.7427493 ,  0.        ,
                  0.8355929 ,  0.        ,  0.9284366 ,  0.        ,  1.0212802 ,
                  0.        ,  1.114124  ,  0.        ,  1.2069676 ,  0.        ,
                  1.2998112 , -0.00664722,  1.3923068 , -0.0163425 ,  1.4846429 ,
                  -0.02603779,  1.5769789 , -0.03573307,  1.669315  , -0.04539606,
                  1.7616544 ,  0.463     ], dtype=float32),
      'social_vehicles': array([[-0.032     , -0.39546743,  1.0005072 ,  0.45663914],    # 1 f
                  [ 0.        , -0.4430486 ,  0.        ,  0.44250438],# 2
                  [-0.032     , -0.91204065,  1.0005072 ,  0.43388   ],# 3 f
                  [ 0.        , -1.1294402 ,  0.        ,  0.13230684],# 4
                  [ 1.1804423 ,  0.2529    ,  0.5002536 ,  0.1131044 ],# 5 f
                  [ 1.2966555 ,  0.2529    ,  0.5002536 ,  0.11878929],# 6 f
                  [ 1.4134977 ,  0.2529    ,  0.5002536 ,  0.11225689],# 7 f
                  [-1.6743574 ,  0.18762003, -0.50001675,  0.14572135],# 8
                  [ 0.        ,  0.        ,  0.        ,  0.        ],# 9  (added to keep consistent input dimensions for NN)
                  [ 0.        ,  0.        ,  0.        ,  0.        ]],     # 10 (added to keep consistent input dimensions for NN)
                  dtype=float32)
}
```

A social vehicle:
[
relative_position_x / 100,
relative_position_y / 100,
relative_heading / PI,
speed / 30
]

The social vehicles are sorted by distance to the ego vehicle.

```
social_vehicles_state in dqn network: tensor([[[-0.0320, -0.3955,  1.0005,  0.4566],
         [ 0.0000, -0.4430,  0.0000,  0.4425],
         [-0.0320, -0.9120,  1.0005,  0.4339],
         [ 0.0000, -1.1294,  0.0000,  0.1323],
         [ 1.1804,  0.2529,  0.5003,  0.1131],
         [ 1.2967,  0.2529,  0.5003,  0.1188],
         [ 1.4135,  0.2529,  0.5003,  0.1123],
         [-1.6744,  0.1876, -0.5000,  0.1457],
         [ 0.0000,  0.0000,  0.0000,  0.0000],
         [ 0.0000,  0.0000,  0.0000,  0.0000]]], device='cuda:0')
initial states in precog: tensor([[[-0.0320, -0.3955,  1.0005,  0.4566],
         [ 0.0000, -0.4430,  0.0000,  0.4425],
         [-0.0320, -0.9120,  1.0005,  0.4339],
         [ 0.0000, -1.1294,  0.0000,  0.1323],
         [ 1.1804,  0.2529,  0.5003,  0.1131],
         [ 1.2967,  0.2529,  0.5003,  0.1188],
         [ 1.4135,  0.2529,  0.5003,  0.1123],
         [-1.6744,  0.1876, -0.5000,  0.1457],
         [ 0.0000,  0.0000,  0.0000,  0.0000],
         [ 0.0000,  0.0000,  0.0000,  0.0000]]], device='cuda:0')
states in precog before network: tensor([[-0.0320, -0.3955,  1.0005,  0.4566],
        [ 0.0000, -0.4430,  0.0000,  0.4425],
        [-0.0320, -0.9120,  1.0005,  0.4339],
        [ 0.0000, -1.1294,  0.0000,  0.1323],
        [ 1.1804,  0.2529,  0.5003,  0.1131],
        [ 1.2967,  0.2529,  0.5003,  0.1188],
        [ 1.4135,  0.2529,  0.5003,  0.1123],
        [-1.6744,  0.1876, -0.5000,  0.1457],
        [ 0.0000,  0.0000,  0.0000,  0.0000],
        [ 0.0000,  0.0000,  0.0000,  0.0000]], device='cuda:0')
states in precog after network: [tensor([[ 0.0216,  0.0683,  0.0153,  0.1342,  0.0027, -0.0465,  0.0457,  0.2925,
          0.0158,  0.0467,  0.0602,  0.1184, -0.0370, -0.0417,  0.0725,  0.2182,
          0.0193,  0.0307,  0.0231,  0.1644,  0.0395, -0.0737,  0.0291,  0.3126,
          0.0258,  0.0090,  0.0938,  0.1346, -0.0449, -0.0554,  0.0563,  0.2712,
          0.0823,  0.0320,  0.0646,  0.1172, -0.0722,  0.0238, -0.0063,  0.2642,
          0.0859,  0.0251,  0.0664,  0.1273, -0.0740,  0.0210, -0.0102,  0.2736,
          0.0902,  0.0204,  0.0685,  0.1377, -0.0755,  0.0181, -0.0114,  0.2830,
          0.0653, -0.0007,  0.0542,  0.0640, -0.0574, -0.1763,  0.1227,  0.1946,
          0.0441,  0.0693,  0.0840,  0.0505, -0.0433,  0.0088,  0.0771,  0.1557,
          0.0441,  0.0693,  0.0840,  0.0505, -0.0433,  0.0088,  0.0771,  0.1557]],
        device='cuda:0')]
social_feature in dqn network: [tensor([[ 0.0216,  0.0683,  0.0153,  0.1342,  0.0027, -0.0465,  0.0457,  0.2925,
          0.0158,  0.0467,  0.0602,  0.1184, -0.0370, -0.0417,  0.0725,  0.2182,
          0.0193,  0.0307,  0.0231,  0.1644,  0.0395, -0.0737,  0.0291,  0.3126,
          0.0258,  0.0090,  0.0938,  0.1346, -0.0449, -0.0554,  0.0563,  0.2712,
          0.0823,  0.0320,  0.0646,  0.1172, -0.0722,  0.0238, -0.0063,  0.2642,
          0.0859,  0.0251,  0.0664,  0.1273, -0.0740,  0.0210, -0.0102,  0.2736,
          0.0902,  0.0204,  0.0685,  0.1377, -0.0755,  0.0181, -0.0114,  0.2830,
          0.0653, -0.0007,  0.0542,  0.0640, -0.0574, -0.1763,  0.1227,  0.1946,
          0.0441,  0.0693,  0.0840,  0.0505, -0.0433,  0.0088,  0.0771,  0.1557,
          0.0441,  0.0693,  0.0840,  0.0505, -0.0433,  0.0088,  0.0771,  0.1557]],
        device='cuda:0')]
state in dqn: {'low_dim_states': tensor([[ 0.4630,  0.0000, -0.0000,  0.0000, -0.8581,  0.2522,  0.0000,  0.0000,
          0.0000,  0.0928,  0.0000,  0.1857,  0.0000,  0.2785,  0.0000,  0.3714,
          0.0000,  0.4642,  0.0000,  0.5571,  0.0000,  0.6499,  0.0000,  0.7427,
          0.0000,  0.8356,  0.0000,  0.9284,  0.0000,  1.0213,  0.0000,  1.1141,
          0.0000,  1.2070,  0.0000,  1.2998, -0.0066,  1.3923, -0.0163,  1.4846,
         -0.0260,  1.5770, -0.0357,  1.6693, -0.0454,  1.7617,  0.4630,  0.0000,
          0.0000]], device='cuda:0'), 'social_vehicles': tensor([[[-0.0320, -0.3955,  1.0005,  0.4566],
         [ 0.0000, -0.4430,  0.0000,  0.4425],
         [-0.0320, -0.9120,  1.0005,  0.4339],
         [ 0.0000, -1.1294,  0.0000,  0.1323],
         [ 1.1804,  0.2529,  0.5003,  0.1131],
         [ 1.2967,  0.2529,  0.5003,  0.1188],
         [ 1.4135,  0.2529,  0.5003,  0.1123],
         [-1.6744,  0.1876, -0.5000,  0.1457],
         [ 0.0000,  0.0000,  0.0000,  0.0000],
         [ 0.0000,  0.0000,  0.0000,  0.0000]]], device='cuda:0')}
```