The state space is the set of possible state the agent can assume. It is continous cause a state/observation is described by a vector of 11 float elements in the range of [-inf, inf], but they're normalized such that they're included in the range [-1, 1].

The action space is the set of possible action the agent can perform. It is continous cause an action is described by a vector of 3 float elements in the range of [-1, 1].

Source domain: [2.53429174 3.92699082 2.71433605 5.0893801]

Target domain: [3.53429174 3.92699082 2.71433605 5.0893801 ]

**TRAINING PHASE (source2source)**

LR using PPO = 3e-4, LR using TRPO = 1e-3 (IF NOT SPECIFIED)

|  |  |  |
| --- | --- | --- |
| AGENT | TIMESTEPS | RESULT (mean +/- std dev on the reward) |
| PPO | 1K | 75.59 +/- 1.54 |
| PPO | 10K | 74.05 +/- 1.41 |
| PPO | 20K | 221.78 +/- 1.13 |
| PPO | 50K | 366.84 +/- 1.48 |
| PPO | 100K | 575.52 +/- 33.32 |
| TRPO | 1K | 67.73 +/- 1.52 |
| TRPO | 10K | 253.03 +/- 1.57 |
| TRPO | 20K | 200.66 +/- 0.75 |
| TRPO | 50K | 388.70 +/- 218.39 |
| TRPO | 100K | 827.65 +/- 260.86 |
| TRPO (lr=3e-4) | 50K | 289.30 +/- 1.68 |
| TRPO (lr=3e-4) | 100K | 404.18 +/- 3.46 |
| TRPO (lr = 3e-4) | 10K | 290.37 +/- 1.97 |
| PPO (lr = 3e-5) | 100K | 181.55 +/- 2.18 |
| PPO (lr = 1e-3) | 100K | 1369.29 +/- 123.25 |
| PPO | 150K | 1421.12 +/- 31.52 |
| PPO | 200K | 761.03 +/- 144.89 |
| PPO | 175K | 1387.40 +/- 5.54 |
| PPO (lr=3e-4) | 150K | 520.35 +/- 92.73 |
| PPO (lr=1e-3) | 150K | 997.20 +/- 350.13 |
| PPO (lr=1e-4) | 150K | 494.84 +/- 51.98 |
| TRPO | 150K | 1380.45 +/- 36.29 |
| TRPO | 200K | 1519.37 +/- 11.66 |
| TRPO | 300K | 1667.76 +/- 7.55 |
| TRPO | 500K | 1660.24 +/- 2.87 |
| SAC 3e-4 | 20K | 263.64 +/- 20.54 |
| SAC 3e-4 | 50K | 879.10 +/- 388.99 |
| SAC 3e-4 | 100K | 791.42 +/- 18.68 |
| SAC 3e-4 | 200k | 1504.27 +/- 24.22 |
| SAC 3e-5 | 20K | 248.21 +/- 1.05 |
| SAC 3e-5 | 50K | 345.37 +/- 5.04 |
| SAC 3e-5 | 100K | 314.30 +/- 3.32 |
| SAC 1e-3 | 20K | 390.86 +/- 2.75 |
| SAC 1e-3 | 50K | 335.23 +/- 219.35 |
| SAC 1e-3 | 100K | 1563.19 +/- 3.01 |

The previous results can be used to fulfill the next table (they are the source-source average return)!

**TABLE FOR STEP 2.3**

LR using PPO = 3e-4, LR using TRPO = 1e-3 (IF NOT SPECIFIED)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ALGORITHM | HYPERPARAMETERS | SOURCE-SOURCE AVERAGE RETURN | SOURCE-TARGET AVERAGE RETURN | TARGET-TARGET AVERAGE RETURN |
| TRPO | TS=300K | 1667.76 +/- 7.55 | 977.76 +/- 16.55 | 1545.72 +/- 139.68 |
| TRPO | TS=500K | 1660.24 +/- 2.87 | 1002.65 +/- 5.69 | 1652.47 +/- 5.33 |
| TRPO | TS=200K | 1519.37 +/- 11.66 | 1440.56 +/- 185.18 | 1465.65 +/- 7.18 |
| PPO | TS=150K | 1421.12 +/- 31.52 | 844.19 +/- 261.51 | 1071.64 +/- 26.01 |
| PPO | TS=175K | 1387.40 +/- 5.54 | 1316.47 +/- 10.34 | 715.40 +/- 37.81 |
| TRPO | TS=200K, LR=3E-4 | 1276.75 +/- 153.49 | 889.60 +/- 165.36 | 873.66 +/- 92.97 |
| TRPO | TS=300K, LR=3E-4 | 1160.93 +/- 243.49 | 1463.48 +/- 38.29 | 769.00 +/- 210.86 |
| TRPO | TS=500K, LR=3E-4 | 1626.47 +/- 9.49 | 1095.82 +/- 105.24 | 1541.97 +/- 5.37 |

**TABLE FOR STEP 3**

LR using PPO = 3e-4, LR using TRPO = 1e-3 (IF NOT SPECIFIED)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ALGORITHM | HYPERPARAMETERS | UDR distribution | SOURCE-SOURCE AVERAGE RETURN | SOURCE-TARGET AVERAGE RETURN |
| TRPO | TS=200K | Uniform (10% mass variance)  Range for mass 1:  [3.534, 4.319) Range for mass 2: [2.442, 2.985) Range for mass 3: [4.580, 5.598) | 1283.27 +/- 122.25 | 719.36 +/- 13.86 |
| TRPO | TS=200K | Uniform (20% mass variance)  Range for mass 1: [3.142, 4.712)  Range for mass 2: [2.171, 3.257)  Range for mass 3: [4.072, 6.107) | 1486.67 +/- 7.05 | 1116.52 +/- 20.88 |
| TRPO | TS=200K | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105)  Range for mass 2: [1.900, 3.529)  Range for mass 3: [3.563, 6.616) | 1472.13 +/- 113.50 | 906.47 +/- 16.78 |
| TRPO | TS=200K | Uniform (40% mass variance)  Range for mass 1: [2.356, 5.498) Range for mass 2: [1.629, 3.800) Range for mass 3: [3.054, 7.125) | 1606.69 +/- 72.88 | 901.86 +/- 20.69 |
| TRPO | TS=300K, LR=3E-4 | Uniform (10% mass variance)  Range for mass 1:  [3.534, 4.319) Range for mass 2: [2.442, 2.985) Range for mass 3: [4.580, 5.598) | 1097.42 +/- 4.43 | 959.15 +/- 3.90 |
| TRPO | TS=300K, LR=3E-4 | Uniform (20% mass variance)  Range for mass 1: [3.142, 4.712)  Range for mass 2: [2.171, 3.257)  Range for mass 3: [4.072, 6.107) | 1176.45 +/- 100.99 | 753.40 +/- 7.63 |
| TRPO | TS=300K, LR=3E-4 | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105)  Range for mass 2: [1.900, 3.529)  Range for mass 3: [3.563, 6.616) | 971.38 +/- 35.90 | 1019.81 +/- 62.84 |
| TRPO | TS=500K | Uniform (10% mass variance)  Range for mass 1: [3.534, 4.320)  Range for mass 2: [2.443, 2.986)  Range for mass 3: [4.580, 5.598) | 1589.22 +/- 2.73 | 824.54 +/- 6.95 |
| TRPO | TS=500K | Uniform (20% mass variance)  Range for mass 1: [3.142, 4.712)  Range for mass 2: [2.171, 3.257)  Range for mass 3: [4.072, 6.107) | 1582.34 +/- 1.78 | 950.52 +/- 12.58 |
| TRPO | TS=500K | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105)  Range for mass 2: [1.900, 3.529)  Range for mass 3: [3.563, 6.616) | 1683.84 +/- 10.2 | 1641.62 +/- 181.69 |
| TRPO | TS=500K | Uniform (40% mass variance)  Range for mass 1: [2.356, 5.498)  Range for mass 2: [1.629, 3.800)  Range for mass 3: [3.054, 7.125) | 1647.88 +/- 2.54 | 944.78 +/- 11.68 |
| TRPO | TS=500K | Uniform (60% mass variance)  Range for mass 1: [1.571, 6.283)  Range for mass 2: [1.086, 4.343)  Range for mass 3: [2.036, 8.143) | 1571.66 +/- 4.91 | 877.05 +/- 13.82 |
| TRPO | TS=1M | Uniform (10% mass variance)  Range for mass 1: [3.534, 4.320)  Range for mass 2: [2.443, 2.986)  Range for mass 3: [4.580, 5.598) | 1693.16 +/- 9.66 | 909.72 +/- 16.00 |
| TRPO | TS=1M | Uniform (20% mass variance)  Range for mass 1: [3.142, 4.712)  Range for mass 2: [2.171, 3.257)  Range for mass 3: [4.072, 6.107) | 1681.77 +/- 6.90 | 1193.56 +/- 122.39 |
| TRPO | TS=1M | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105)  Range for mass 2: [1.900, 3.529)  Range for mass 3: [3.563, 6.616) | 1693.54 +/- 3.55 | 1259.21 +/- 81.36 |
| TRPO | TS=1M | Uniform (60% mass variance)  Range for mass 1: [1.571, 6.283)  Range for mass 2: [1.086, 4.343)  Range for mass 3: [2.036, 8.143) | 1676.72 +/- 32.21 | 1018.84 +/- 22.32 |
| PPO | TS=175K | Uniform (10% mass variance)  Range for mass 1:  [3.534, 4.319) Range for mass 2: [2.442, 2.985) Range for mass 3: [4.580, 5.598) | 1130.73 +/- 29.70 | 1055.48 +/- 20.11 |
| PPO | TS=175K | Uniform (20% mass variance)  Range for mass 1: [3.142, 4.712)  Range for mass 2: [2.171, 3.257)  Range for mass 3: [4.072, 6.107) | 1412.45 +/- 229.11 | 801.16 +/- 151.02 |
| PPO | TS=175K | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105)  Range for mass 2: [1.900, 3.529)  Range for mass 3: [3.563, 6.616) | 1129.56 +/- 51.17 | 1267.33 +/- 48.50 |
| PPO | TS=500K | Uniform (10% mass variance)  Range for mass 1: [3.534, 4.320)  Range for mass 2: [2.443, 2.986)  Range for mass 3: [4.580, 5.598) | 1658.27 +/- 44.44 | 1058.04 +/- 79.65 |
| PPO | TS=500K | Uniform (20% mass variance)  Range for mass 1: [3.142, 4.712)  Range for mass 2: [2.171, 3.257)  Range for mass 3: [4.072, 6.107) | 1652.04 +/- 44.26 | 907.13 +/- 77.20 |
| PPO | TS=500K | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105)  Range for mass 2: [1.900, 3.529)  Range for mass 3: [3.563, 6.616) | 1734.12 +/- 7.45 | 1299.25 +/- 79.71 |
| PPO | TS=500K | Uniform (40% mass variance)  Range for mass 1: [2.356, 5.498)  Range for mass 2: [1.629, 3.800)  Range for mass 3: [3.054, 7.125) | 1533.96 +/- 59.65 | 1041.09 +/- 170.18 |
| PPO | TS=500K | Uniform (60% mass variance)  Range for mass 1: [1.571, 6.283)  Range for mass 2: [1.086, 4.343)  Range for mass 3: [2.036, 8.143) | 1573.85 +/- 151.28 | 1236.25 +/- 204.97 |
| PPO | TS=1M | Uniform (10% mass variance)  Range for mass 1: [3.534, 4.320)  Range for mass 2: [2.443, 2.986)  Range for mass 3: [4.580, 5.598) | 1063.45 +/- 35.99 | 752.20 +/- 19.77 |

**TABLE FOR STEP 4.1**

LR using PPO = 3e-4, LR using TRPO = 1e-3 (IF NOT SPECIFIED)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ALGORITHM | HYPERPARAMETERS | UDR distribution | SOURCE-SOURCE AVERAGE RETURN | SOURCE-TARGET AVERAGE RETURN |
| TRPO | TS=10K | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 58.78 +/- 4.26 | 67.27 +/- 2.09 |
| TRPO | TS=20K | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 51.98 +/- 2.03 | 51.80 +/- 1.00 |
| TRPO | TS=30K | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 61.51 +/- 7.88 | 79.13 +/- 1.51 |
| TRPO | TS=40K | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 53.25 +/- 2.87 | 48.72 +/- 0.75 |
| TRPO | TS=50K | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 51.62 +/- 1.22 | 53.08 +/- 1.01 |
| TRPO | TS=60K | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 48.90 +/- 2.78 | 47.20 +/- 0.78 |
| TRPO | TS=70K | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 83.19 +/- 28.56 | 79.49 +/- 28.35 |
| TRPO | TS=80K | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 115.24 +/- 31.57 | 99.89 +/- 3.72 |
| TRPO | TS=125K | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 71.48 +/- 38.44 | 122.79 +/- 23.77 |
| TRPO | TS=200K | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 92.62 +/- 1.07 | 88.05 +/- 1.12 |
| TRPO | TS=25K, LR=1E-4 | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 66.30 +/- 2.09 | 61.55 +/- 1.25 |
| TRPO | TS=50K, LR=1E-4 | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 50.92 +/- 1.01 | 56.97 +/- 19.68 |
| TRPO | TS=75K, LR=1E-4 | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 50.08 +/- 1.16 | 54.32 +/- 1.36 |
| TRPO | TS=100K, LR=1E-4 | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 122.81 +/- 1.27 | 138.08 +/- 4.50 |
| TRPO | TS=125K, LR=1E-4 | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 118.76 +/- 1.30 | 121.72 +/- 1.37 |
| TRPO | TS=150K, LR=1E-4 | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 126.19 +/- 9.20 | 127.64 +/- 3.47 |
| TRPO | TS=25K, LR= 1-E2 | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 54.87 +/- 1.00 | 55.52 +/- 13.96 |
| TRPO | TS=50K, LR= 1-E2 | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 50.97 +/- 0.97 | 47.32 +/- 26.00 |
| TRPO | TS=75K, LR= 1-E2 | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 115.04 +/- 3.27 | 106.75 +/- 26.00 |
| TRPO | TS=100K, LR= 1-E2 | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 49.42 +/- 0.97 | 111.29 +/- 4.55 |
| TRPO | TS=125K, LR= 1-E2 | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 99.50 +/- 8.12 | 85.01 +/- 5.53 |
| TRPO | TS=150K, LR= 1-E2 | Uniform (30% mass variance)  Range for mass 1: [2.749, 5.105) Range for mass 2: [1.900, 3.529) Range for mass 3: [3.563, 6.616) | 46.87 +/- 0.98 | 47.21 +/- 1.15 |