|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Single Q-Learning | | | | | | | | |
| Combination | Mean | S.T.D | Median | I.Q.R | Max | Min | Failed | Difference |
| - | | | | | | | | |
| Time | 255.87 | 26.25 | 247.0 | 20.0 | 325 | 228 | 0 | 18.32 |
| Velocity | 288.23 | 36.60 | 275.5 | 39.0 | 389 | 247 | 1 | 0 |
| Original | 293.87 | 36.64 | 286.5 | 43.0 | 414 | 252 | 0 | 0 |
| Height | 296.70 | 34.59 | 292.0 | 43.0 | 398 | 245 | 1 | 0 |
| L | | | | | | | | |
| Time | 243.80 | 15.12 | 242.5 | 15.0 | 287 | 224 | 0 | 32.76 |
| Height | 259.43 | 20.08 | 254.0 | 22.0 | 314 | 233 | 0 | 16.19 |
| Velocity | 267.37 | 31.17 | 257.5 | 34.0 | 394 | 235 | 0 | 5.49 |
| Original | 268.47 | 29.96 | 260.0 | 23.0 | 359 | 237 | 0 | 4.73 |
| L + D | | | | | | | | |
| Time | 238.93 | 14.74 | 236.0 | 10.0 | 284 | 220 | 0 | 37.69 |
| Height | 259.03 | 11.90 | 257.0 | 14.0 | 289 | 236 | 0 | 18.01 |
| Velocity | 265.43 | 24.13 | 260.0 | 14.0 | 376 | 246 | 0 | 9.27 |
| Original | 266.87 | 29.70 | 259.5 | 20.0 | 384 | 235 | 0 | 6.40 |
| L + D + R | | | | | | | | |
| Time | 239.60 | 15.89 | 236.5 | 15.0 | 308 | 222 | 0 | 36.83 |
| Height | 259.43 | 18.22 | 253.0 | 21.0 | 326 | 240 | 0 | 16.56 |
| Velocity | 261.23 | 21.41 | 255.0 | 12.0 | 328 | 239 | 0 | 14.10 |
| Original | 274.57 | 41.31 | 263.5 | 29.0 | 443 | 243 | 0 | 0 |
| L + O + D + R | | | | | | | | |
| Original | - | - | - | - | - | - | - | - |
| Time | - | - | - | - | - | - | - | - |
| Velocity | - | - | - | - | - | - | - | - |
| Height | - | - | - | - | - | - | - | - |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Double Q-Learning | | | | | | | | |
| Combination | Mean | S.T.D | Median | I.Q.R | Max | Min | Failed | Difference |
| - | | | | | | | | |
| Original | 258.03 | 16.76 | 259.0 | 21.0 | 302 | 233 | 2 | 18.24 |
| Time | 262.73 | 43.64 | 250.0 | 29.0 | 438 | 233 | 3 | 6.25 |
| Height | 279.60 | 43.51 | 271.0 | 55.0 | 416 | 229 | 5 | 0 |
| Velocity | 289.33 | 50.32 | 278.0 | 39.0 | 477 | 223 | 1 | 0 |
| L | | | | | | | | |
| Original | 243.83 | 17.35 | 245.0 | 26.0 | 293 | 214 | 1 | 32.33 |
| Time | 248.10 | 29.86 | 240.5 | 22.0 | 332 | 212 | 0 | 25.12 |
| Velocity | 256.23 | 41.28 | 244.5 | 16.0 | 436 | 222 | 1 | 13.53 |
| Height | 262.07 | 58.30 | 243.5 | 20.0 | 470 | 215 | 2 | 1.73 |
| L + D | | | | | | | | |
| Time | 239.40 | 37.74 | 231.5 | 15.0 | 425 | 211 | 1 | 31.49 |
| Original | 250.43 | 22.90 | 245.5 | 20.0 | 322 | 219 | 0 | 24.56 |
| Height | 262.93 | 37.88 | 251.5 | 33.0 | 370 | 229 | 1 | 7.92 |
| Velocity | 261.37 | 45.48 | 248.0 | 25.0 | 460 | 230 | 2 | 6.99 |
| L + D + R | | | | | | | | |
| Time | 235.53 | 16.78 | 233.0 | 22.0 | 284 | 210 | 1 | 40.73 |
| Velocity | 245.43 | 21.21 | 240.5 | 32.0 | 305 | 214 | 1 | 29.95 |
| Height | 256.90 | 41.07 | 244.0 | 23.0 | 438 | 224 | 1 | 12.93 |
| Original | 270.80 | 67.56 | 247.0 | 42.0 | 500 | 225 | 0 | 0 |
| L + O + D + R | | | | | | | | |
| Original | - | - | - | - | - | - | - | - |
| Time | - | - | - | - | - | - | - | - |
| Velocity | - | - | - | - | - | - | - | - |
| Height | - | - | - | - | - | - | - | - |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Triple Q-Learning | | | | | | | | |
| Combination | Mean | S.T.D | Median | I.Q.R | Max | Min | Failed | Difference |
| - | | | | | | | | |
| Time | 251.30 | 49.85 | 236.5 | 32.0 | 466 | 211 | 4 | 15.55 |
| Height | 263.90 | 40.72 | 253.5 | 33.0 | 419 | 212 | 5 | 6.04 |
| Velocity | 267.03 | 55.20 | 254.0 | 28.0 | 468 | 222 | 3 | 0 |
| Original | 286.97 | 67.94 | 262.0 | 68.0 | 496 | 226 | 3 | 0 |
| R | | | | | | | | |
| Time | 244.47 | 26.09 | 240.5 | 41.0 | 300 | 207 | 6 | 29.76 |
| Height | 262.27 | 31.48 | 250.0 | 57.0 | 344 | 225 | 1 | 10.50 |
| Original | 263.93 | 37.28 | 251.5 | 37.0 | 414 | 227 | 2 | 7.11 |
| Velocity | 268.97 | 38.63 | 264.0 | 33.0 | 413 | 222 | 3 | 1.65 |
| L + D | | | | | | | | |
| Time | 227.67 | 18.21 | 224.0 | 17.0 | 278 | 199 | 0 | 48.33 |
| Height | 229.13 | 14.57 | 230.0 | 18.0 | 281 | 209 | 0 | 47.51 |
| Original | 245.97 | 39.84 | 234.0 | 22.0 | 417 | 213 | 1 | 24.26 |
| Velocity | 246.47 | 42.24 | 234.5 | 21.0 | 444 | 217 | 0 | 22.98 |
| L + D + R | | | | | | | | |
| Time | 224.60 | 19.44 | 223.5 | 21.0 | 289 | 202 | 2 | 51.15 |
| Original | 236.90 | 17.40 | 234.5 | 17.0 | 291 | 216 | 1 | 39.25 |
| Velocity | 237.43 | 16.23 | 236.0 | 19.0 | 271 | 211 | 0 | 38.93 |
| Height | 247.03 | 42.49 | 233.0 | 24.0 | 418 | 210 | 2 | 22.33 |
| L + O + D + R | | | | | | | | |
| Original | - | - | - | - | - | - | - | - |
| Time | - | - | - | - | - | - | - | - |
| Velocity | - | - | - | - | - | - | - | - |
| Height | - | - | - | - | - | - | - | - |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Quadruple Q-Learning | | | | | | | | |
| Combination | Mean | S.T.D | Median | I.Q.R | Max | Min | Failed | Difference |
| - | | | | | | | | |
| Time | 228.57 | 15.68 | 224.0 | 26.0 | 261 | 201 | 1 | 47.90 |
| Height | 251.10 | 30.52 | 241.5 | 35.0 | 328 | 218 | 0 | 21.94 |
| Velocity | 255.90 | 55.98 | 238.0 | 37.0 | 481 | 215 | 1 | 8.75 |
| Original | 263.23 | 51.20 | 250.0 | 53.0 | 491 | 216 | 4 | 3.14 |
| L | | | | | | | | |
| Velocity | 227.07 | 18.42 | 222.5 | 23.0 | 274 | 204 | 1 | 48.89 |
| Original | 233.00 | 38.63 | 226.0 | 18.0 | 428 | 207 | 0 | 37.61 |
| Height | 235.13 | 40.59 | 229.0 | 27.0 | 426 | 200 | 1 | 34.85 |
| Time | 230.27 | 65.31 | 210.0 | 29.0 | 490 | 191 | 2 | 30.89 |
| L + D | | | | | | | | |
| Time | 221.03 | 40.47 | 211.5 | 16.0 | 415 | 194 | 1 | 48.99 |
| Velocity | 233.57 | 16.98 | 230.5 | 26.0 | 267 | 209 | 0 | 42.66 |
| Height | 228.13 | 39.81 | 220.5 | 12.0 | 433 | 209 | 0 | 42.11 |
| Original | 232.97 | 23.27 | 223.5 | 23.0 | 308 | 209 | 1 | 41.94 |
| L + D + R | | | | | | | | |
| Time | 212.97 | 18.21 | 209.5 | 16.0 | 287 | 193 | 0 | 63.03 |
| Velocity | 232.57 | 23.78 | 226.5 | 22.0 | 321 | 206 | 0 | 42.22 |
| Height | 233.13 | 22.45 | 225.5 | 19.0 | 308 | 207 | 0 | 41.97 |
| Original | 241.37 | 41.27 | 232.0 | 23.0 | 423 | 210 | 0 | 28.39 |
| L + O + D + R | | | | | | | | |
| Original | - | - | - | - | - | - | - | - |
| Time | - | - | - | - | - | - | - | - |
| Velocity | - | - | - | - | - | - | - | - |
| Height | - | - | - | - | - | - | - | - |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Quintuple Q-Learning | | | | | | | | |
| Combination | Mean | S.T.D | Median | I.Q.R | Max | Min | Failed | Difference |
| - | | | | | | | | |
| Time | 222.40 | 17.71 | 220.5 | 22.0 | 262 | 192 | 4 | 53.69 |
| Height | 244.67 | 25.30 | 238.5 | 27.0 | 346 | 212 | 0 | 29.76 |
| Original | 251.47 | 34.26 | 243.5 | 40.0 | 343 | 213 | 4 | 20.49 |
| Velocity | 256.50 | 39.75 | 247.0 | 46.0 | 374 | 210 | 1 | 13.76 |
| L | | | | | | | | |
| Time | 208.70 | 16.84 | 204.0 | 10.0 | 274 | 190 | 1 | 67.56 |
| Height | 218.70 | 10.81 | 218.0 | 16.0 | 244 | 199 | 0 | 58.48 |
| Original | 222.37 | 10.50 | 221.5 | 12.0 | 261 | 208 | 0 | 54.85 |
| Velocity | 226.97 | 24.78 | 220.0 | 12.0 | 322 | 206 | 0 | 47.58 |
| L + D | | | | | | | | |
| Time | 210.87 | 19.35 | 207.0 | 15.0 | 286 | 190 | 1 | 64.90 |
| Height | 217.73 | 16.88 | 212.5 | 15.0 | 277 | 198 | 0 | 58.52 |
| Original | 228.77 | 19.21 | 225.5 | 18.0 | 285 | 202 | 1 | 47.03 |
| Velocity | 231.10 | 38.19 | 221.0 | 17.0 | 418 | 205 | 0 | 39.65 |
| L + D + R | | | | | | | | |
| Time | 206.47 | 14.04 | 202.0 | 21.0 | 237 | 190 | 3 | 70.26 |
| Height | 219.67 | 13.76 | 218.5 | 21.0 | 246 | 193 | 0 | 57.11 |
| Original | 222.67 | 10.28 | 223.0 | 14.0 | 250 | 206 | 0 | 54.58 |
| Velocity | 229.77 | 16.91 | 228.5 | 25.0 | 262 | 203 | 0 | 46.48 |
| L + O + D + R | | | | | | | | |
| Original | - | - | - | - | - | - | - | - |
| Time | - | - | - | - | - | - | - | - |
| Velocity | - | - | - | - | - | - | - | - |
| Height | - | - | - | - | - | - | - | - |