```
 9                    processor=processor, nb_steps_warmup=agent_nb_steps_warmup, gamma=.99, target_model_update=agent_target_model_u
10                    train_interval=agent_train_interval, batch_size=agent_batch_size,
11                    enable_double_dqn=True,
12                    enable_dueling_network=True, dueling_type='avg'
13                    )
14
15  https://github.com/keras-rl/keras-rl/tree/master/examples
16  dqn = DQNAgent(model=model, nb_actions=nb_actions, memory=memory, nb_steps_warmup=10,
17                 enable_dueling_network=True, dueling_type='avg', target_model_update=1e-2, policy=policy)
18
19  dqn.show_hyperparams()
20  TO-DO
21  model.compile(loss='binary_crossentropy', optimizer='adam', metrics=['accuracy'])
22  ptimizer = optimizer_type # TO-DO
23  qn.compile(optimizer, metrics=['mae'])
24
25  ''
26  ef huber_loss(a, b, in_keras=True):
27      error = a - b
28      quadratic_term = error*error / 2
29      linear_term = abs(error) - 1/2
30      use_linear_term = (abs(error) > 1.0)
31      if in_keras:
32          # Keras won't let us multiply floats by booleans, so we explicitly cast the booleans to floats
33          use_linear_term = K.cast(use_linear_term, 'float32')
34      return use_linear_term * linear_term + (1-use_linear_term) * quadratic_term
35
36  oss=huber_loss
37  ustom_objects={'huber_loss': huber_loss}
38  elf.model.compile(optimizer, loss=huber_loss)
39  ''
```

⊳ "\ndef huber_loss(a, b, in_keras=True):\n   error = a - b\n   quadratic_term = error*error / 2\n   linear_term = abs(err

---

```
 1 # Timestamp para el nombre de archivo de pesos
 2 now = datetime.now()
 3 date_time = now.strftime("%Y%m%d%H%M")
 4
 5 # Nombre del archivo para guardar los pesos
 6 weights_filename = 'dqn_{}_weights.h5f'.format(ENV_NAME)
 7 weights_filename = date_time + '_' + weights_filename
 8
 9 # checkpoint por intervalo
10 saved_model= date_time + '_dqn_PartialRunPong_weight_{step}.h5'
11 checkpoint = ModelIntervalCheckpoint(saved_model, interval=50000)
12
13 # logs para TensorBoard
14 tb_log_dir = 'logs/tmp'
15 tb_callback = TensorBoard(log_dir=tb_log_dir, histogram_freq=0, write_graph=True)
16
17 nb_steps = 1750000
18 nb_steps = train_steps
19 # Entrenamento con diferentes callbacks
20 #dqn.fit(env, nb_steps=nb_steps, visualize=False, callbacks=[checkpoint, tb_callback], verbose=2)
21 #dqn.fit(env, nb_steps=nb_steps, visualize=False, callbacks=[tb_callback], verbose=2)
22 #dqn.fit(env, nb_steps=nb_steps, visualize=False, callbacks=[checkpoint], verbose=2)
23 train_history = dqn.fit(env, nb_steps=nb_steps, visualize=False, verbose=2)
24
25
26 dqn.save_weights(weights_filename, overwrite=True)
27 print("Pesos guardados en:",weights_filename)
28
29 #nb_episodes = 3
30 #dqn.test(env, nb_episodes=nb_episodes, visualize=False)
31
32 grafica_entrenamiento(train_history)
33
34 calcula_media_test(dqn)
35
36 # colab 397.328 segundos
37 # local 754.133 segundos
```

⊳

```
Training for 1500000 steps ...
    905/1500000: episode: 1, duration: 2.570s, episode steps: 905, steps per second: 352, episode reward: -20.000, mean rev
   1897/1500000: episode: 2, duration: 2.408s, episode steps: 992, steps per second: 412, episode reward: -20.000, mean rev
   2846/1500000: episode: 3, duration: 2.334s, episode steps: 949, steps per second: 407, episode reward: -20.000, mean rev
   3640/1500000: episode: 4, duration: 1.941s, episode steps: 794, steps per second: 409, episode reward: -21.000, mean rev
   4538/1500000: episode: 5, duration: 2.235s, episode steps: 898, steps per second: 402, episode reward: -20.000, mean rev
   5481/1500000: episode: 6, duration: 2.296s, episode steps: 943, steps per second: 411, episode reward: -21.000, mean rev
   6334/1500000: episode: 7, duration: 2.073s, episode steps: 853, steps per second: 411, episode reward: -21.000, mean rev
   7254/1500000: episode: 8, duration: 2.254s, episode steps: 920, steps per second: 408, episode reward: -20.000, mean rev
   8107/1500000: episode: 9, duration: 2.093s, episode steps: 853, steps per second: 408, episode reward: -21.000, mean rev
   9046/1500000: episode: 10, duration: 2.329s, episode steps: 939, steps per second: 403, episode reward: -20.000, mean r
   9936/1500000: episode: 11, duration: 2.133s, episode steps: 890, steps per second: 417, episode reward: -21.000, mean re
  10948/1500000: episode: 12, duration: 7.136s, episode steps: 1012, steps per second: 142, episode reward: -20.000, mean r
  11855/1500000: episode: 13, duration: 5.510s, episode steps: 907, steps per second: 165, episode reward: -20.000, mean re
  12739/1500000: episode: 14, duration: 5.388s, episode steps: 884, steps per second: 164, episode reward: -21.000, mean re
  13826/1500000: episode: 15, duration: 6.645s, episode steps: 1087, steps per second: 164, episode reward: -21.000, mean r
  14739/1500000: episode: 16, duration: 5.557s, episode steps: 913, steps per second: 164, episode reward: -21.000, mean re
  15747/1500000: episode: 17, duration: 6.138s, episode steps: 1008, steps per second: 164, episode reward: -20.000, mean r
  16511/1500000: episode: 18, duration: 4.639s, episode steps: 764, steps per second: 165, episode reward: -21.000, mean re
  17431/1500000: episode: 19, duration: 5.545s, episode steps: 920, steps per second: 166, episode reward: -19.000, mean re
  18363/1500000: episode: 20, duration: 5.687s, episode steps: 932, steps per second: 164, episode reward: -20.000, mean re
  19155/1500000: episode: 21, duration: 4.779s, episode steps: 792, steps per second: 166, episode reward: -21.000, mean re
  20137/1500000: episode: 22, duration: 5.981s, episode steps: 982, steps per second: 164, episode reward: -20.000, mean re
  20948/1500000: episode: 23, duration: 4.875s, episode steps: 811, steps per second: 166, episode reward: -21.000, mean re
  21931/1500000: episode: 24, duration: 5.936s, episode steps: 983, steps per second: 166, episode reward: -20.000, mean re
  22879/1500000: episode: 25, duration: 5.655s, episode steps: 948, steps per second: 168, episode reward: -20.000, mean re
  23703/1500000: episode: 26, duration: 4.985s, episode steps: 824, steps per second: 165, episode reward: -21.000, mean re
  24605/1500000: episode: 27, duration: 5.498s, episode steps: 902, steps per second: 164, episode reward: -20.000, mean re
  25527/1500000: episode: 28, duration: 5.565s, episode steps: 922, steps per second: 166, episode reward: -20.000, mean re
  26381/1500000: episode: 29, duration: 5.190s, episode steps: 854, steps per second: 165, episode reward: -21.000, mean re
  27314/1500000: episode: 30, duration: 5.650s, episode steps: 933, steps per second: 165, episode reward: -19.000, mean re
  28167/1500000: episode: 31, duration: 5.202s, episode steps: 853, steps per second: 164, episode reward: -21.000, mean re
  29070/1500000: episode: 32, duration: 5.455s, episode steps: 903, steps per second: 166, episode reward: -20.000, mean re
  29834/1500000: episode: 33, duration: 4.648s, episode steps: 764, steps per second: 164, episode reward: -21.000, mean re
  30598/1500000: episode: 34, duration: 4.600s, episode steps: 764, steps per second: 166, episode reward: -21.000, mean re
  31643/1500000: episode: 35, duration: 6.308s, episode steps: 1045, steps per second: 166, episode reward: -19.000, mean r
  32436/1500000: episode: 36, duration: 4.797s, episode steps: 793, steps per second: 165, episode reward: -21.000, mean re
  33524/1500000: episode: 37, duration: 6.599s, episode steps: 1088, steps per second: 165, episode reward: -19.000, mean r
  34584/1500000: episode: 38, duration: 6.382s, episode steps: 1060, steps per second: 166, episode reward: -18.000, mean r
  35549/1500000: episode: 39, duration: 5.824s, episode steps: 965, steps per second: 166, episode reward: -19.000, mean re
  36470/1500000: episode: 40, duration: 5.676s, episode steps: 921, steps per second: 162, episode reward: -20.000, mean re
  37472/1500000: episode: 41, duration: 6.129s, episode steps: 1002, steps per second: 163, episode reward: -21.000, mean r
  38314/1500000: episode: 42, duration: 5.097s, episode steps: 842, steps per second: 165, episode reward: -20.000, mean re
  39467/1500000: episode: 43, duration: 6.997s, episode steps: 1153, steps per second: 165, episode reward: -21.000, mean r
  40489/1500000: episode: 44, duration: 6.193s, episode steps: 1022, steps per second: 165, episode reward: -20.000, mean r
  41718/1500000: episode: 45, duration: 7.390s, episode steps: 1229, steps per second: 166, episode reward: -18.000, mean r
  42692/1500000: episode: 46, duration: 5.808s, episode steps: 974, steps per second: 168, episode reward: -21.000, mean re
  43666/1500000: episode: 47, duration: 5.827s, episode steps: 974, steps per second: 167, episode reward: -21.000, mean re
  44598/1500000: episode: 48, duration: 5.564s, episode steps: 932, steps per second: 168, episode reward: -20.000, mean re
  45501/1500000: episode: 49, duration: 5.420s, episode steps: 903, steps per second: 167, episode reward: -20.000, mean re
  46284/1500000: episode: 50, duration: 4.643s, episode steps: 783, steps per second: 169, episode reward: -21.000, mean re
  47318/1500000: episode: 51, duration: 6.209s, episode steps: 1034, steps per second: 167, episode reward: -18.000, mean r
  48142/1500000: episode: 52, duration: 4.949s, episode steps: 824, steps per second: 166, episode reward: -21.000, mean re
  48985/1500000: episode: 53, duration: 5.034s, episode steps: 843, steps per second: 167, episode reward: -20.000, mean re
  49913/1500000: episode: 54, duration: 5.639s, episode steps: 928, steps per second: 165, episode reward: -21.000, mean re
  50677/1500000: episode: 55, duration: 4.634s, episode steps: 764, steps per second: 165, episode reward: -21.000, mean re
  51690/1500000: episode: 56, duration: 6.142s, episode steps: 1013, steps per second: 165, episode reward: -20.000, mean r
  52722/1500000: episode: 57, duration: 6.369s, episode steps: 1032, steps per second: 162, episode reward: -21.000, mean r
  53625/1500000: episode: 58, duration: 5.381s, episode steps: 903, steps per second: 168, episode reward: -20.000, mean re
  54497/1500000: episode: 59, duration: 5.180s, episode steps: 872, steps per second: 168, episode reward: -20.000, mean re
  55351/1500000: episode: 60, duration: 5.120s, episode steps: 854, steps per second: 167, episode reward: -21.000, mean re
  56228/1500000: episode: 61, duration: 5.288s, episode steps: 877, steps per second: 166, episode reward: -21.000, mean re
  57082/1500000: episode: 62, duration: 5.136s, episode steps: 854, steps per second: 166, episode reward: -21.000, mean re
  58014/1500000: episode: 63, duration: 5.578s, episode steps: 932, steps per second: 167, episode reward: -21.000, mean re
  58898/1500000: episode: 64, duration: 5.256s, episode steps: 884, steps per second: 168, episode reward: -21.000, mean re
  59879/1500000: episode: 65, duration: 5.843s, episode steps: 981, steps per second: 168, episode reward: -19.000, mean re
  60782/1500000: episode: 66, duration: 5.384s, episode steps: 903, steps per second: 168, episode reward: -20.000, mean re
  61843/1500000: episode: 67, duration: 6.366s, episode steps: 1061, steps per second: 167, episode reward: -21.000, mean r
  62782/1500000: episode: 68, duration: 5.612s, episode steps: 939, steps per second: 167, episode reward: -20.000, mean re
  63602/1500000: episode: 69, duration: 4.862s, episode steps: 820, steps per second: 169, episode reward: -21.000, mean re
  64626/1500000: episode: 70, duration: 6.066s, episode steps: 1024, steps per second: 169, episode reward: -20.000, mean r
  65512/1500000: episode: 71, duration: 5.392s, episode steps: 886, steps per second: 164, episode reward: -21.000, mean re
  66432/1500000: episode: 72, duration: 5.564s, episode steps: 920, steps per second: 165, episode reward: -21.000, mean re
  67224/1500000: episode: 73, duration: 4.748s, episode steps: 792, steps per second: 167, episode reward: -21.000, mean re
  68113/1500000: episode: 74, duration: 5.295s, episode steps: 889, steps per second: 168, episode reward: -20.000, mean re
  69235/1500000: episode: 75, duration: 6.630s, episode steps: 1122, steps per second: 169, episode reward: -18.000, mean r
  70302/1500000: episode: 76, duration: 6.354s, episode steps: 1067, steps per second: 168, episode reward: -19.000, mean r
  71288/1500000: episode: 77, duration: 5.954s, episode steps: 986, steps per second: 166, episode reward: -19.000, mean re
  72505/1500000: episode: 78, duration: 7.281s, episode steps: 1217, steps per second: 167, episode reward: -20.000, mean r
  73358/1500000: episode: 79, duration: 5.094s, episode steps: 853, steps per second: 167, episode reward: -21.000, mean re
  74243/1500000: episode: 80, duration: 5.272s, episode steps: 885, steps per second: 168, episode reward: -21.000, mean re
  75388/1500000: episode: 81, duration: 6.793s, episode steps: 1145, steps per second: 169, episode reward: -19.000, mean r
  76356/1500000: episode: 82, duration: 5.845s, episode steps: 968, steps per second: 166, episode reward: -20.000, mean re
  77544/1500000: episode: 83, duration: 7.106s, episode steps: 1188, steps per second: 167, episode reward: -19.000, mean r
  78509/1500000: episode: 84, duration: 5.820s, episode steps: 965, steps per second: 166, episode reward: -19.000, mean re
  79963/1500000: episode: 85, duration: 8.669s, episode steps: 1454, steps per second: 168, episode reward: -16.000, mean r
  81027/1500000: episode: 86, duration: 6.369s, episode steps: 1064, steps per second: 167, episode reward: -19.000, mean r
  82187/1500000: episode: 87, duration: 6.944s, episode steps: 1160, steps per second: 167, episode reward: -19.000, mean r
  83461/1500000: episode: 88, duration: 7.660s, episode steps: 1274, steps per second: 166, episode reward: -19.000, mean r
  84780/1500000: episode: 89, duration: 7.801s, episode steps: 1319, steps per second: 169, episode reward: -20.000, mean r
  86134/1500000: episode: 90, duration: 8.101s, episode steps: 1354, steps per second: 167, episode reward: -19.000, mean r
  87528/1500000: episode: 91, duration: 8.425s, episode steps: 1394, steps per second: 165, episode reward: -16.000, mean r
  88879/1500000: episode: 92, duration: 8.288s, episode steps: 1351, steps per second: 163, episode reward: -17.000, mean r
  90036/1500000: episode: 93, duration: 6.944s, episode steps: 1157, steps per second: 167, episode reward: -17.000, mean r
```

```
 91343/1500000: episode: 94, duration: 7.766s, episode steps: 1307, steps per second: 168, episode reward: -18.000, mean 1
 92682/1500000: episode: 95, duration: 8.078s, episode steps: 1339, steps per second: 166, episode reward: -19.000, mean 1
 94041/1500000: episode: 96, duration: 8.103s, episode steps: 1359, steps per second: 168, episode reward: -17.000, mean 1
 95505/1500000: episode: 97, duration: 8.699s, episode steps: 1464, steps per second: 168, episode reward: -17.000, mean 1
 97032/1500000: episode: 98, duration: 9.108s, episode steps: 1527, steps per second: 168, episode reward: -18.000, mean 1
 98344/1500000: episode: 99, duration: 7.874s, episode steps: 1312, steps per second: 167, episode reward: -18.000, mean 1
 99325/1500000: episode: 100, duration: 5.873s, episode steps: 981, steps per second: 167, episode reward: -19.000, mean 1
101108/1500000: episode: 101, duration: 10.644s, episode steps: 1783, steps per second: 168, episode reward: -15.000, mean
102997/1500000: episode: 102, duration: 11.391s, episode steps: 1889, steps per second: 166, episode reward: -13.000, mean
104401/1500000: episode: 103, duration: 8.429s, episode steps: 1404, steps per second: 167, episode reward: -17.000, mean
105565/1500000: episode: 104, duration: 6.965s, episode steps: 1164, steps per second: 167, episode reward: -18.000, mean
107634/1500000: episode: 105, duration: 12.355s, episode steps: 2069, steps per second: 167, episode reward: -12.000, mean
109226/1500000: episode: 106, duration: 9.617s, episode steps: 1592, steps per second: 166, episode reward: -17.000, mean
111088/1500000: episode: 107, duration: 11.150s, episode steps: 1862, steps per second: 167, episode reward: -15.000, mean
112868/1500000: episode: 108, duration: 10.717s, episode steps: 1780, steps per second: 166, episode reward: -17.000, mean
114724/1500000: episode: 109, duration: 11.120s, episode steps: 1856, steps per second: 167, episode reward: -14.000, mean
116187/1500000: episode: 110, duration: 8.779s, episode steps: 1463, steps per second: 167, episode reward: -17.000, mean
117831/1500000: episode: 111, duration: 9.826s, episode steps: 1644, steps per second: 167, episode reward: -15.000, mean
119357/1500000: episode: 112, duration: 9.068s, episode steps: 1526, steps per second: 168, episode reward: -16.000, mean
120996/1500000: episode: 113, duration: 9.743s, episode steps: 1639, steps per second: 168, episode reward: -16.000, mean
122527/1500000: episode: 114, duration: 9.106s, episode steps: 1531, steps per second: 168, episode reward: -15.000, mean
123888/1500000: episode: 115, duration: 8.154s, episode steps: 1361, steps per second: 167, episode reward: -18.000, mean
125753/1500000: episode: 116, duration: 11.137s, episode steps: 1865, steps per second: 167, episode reward: -13.000, mean
127644/1500000: episode: 117, duration: 11.253s, episode steps: 1891, steps per second: 168, episode reward: -12.000, mean
129632/1500000: episode: 118, duration: 12.020s, episode steps: 1988, steps per second: 165, episode reward: -11.000, mean
131052/1500000: episode: 119, duration: 8.473s, episode steps: 1420, steps per second: 168, episode reward: -17.000, mean
132788/1500000: episode: 120, duration: 10.465s, episode steps: 1736, steps per second: 166, episode reward: -13.000, mean
134604/1500000: episode: 121, duration: 10.817s, episode steps: 1816, steps per second: 168, episode reward: -11.000, mean
136306/1500000: episode: 122, duration: 10.122s, episode steps: 1702, steps per second: 168, episode reward: -14.000, mean
138015/1500000: episode: 123, duration: 10.160s, episode steps: 1709, steps per second: 168, episode reward: -11.000, mean
139741/1500000: episode: 124, duration: 10.440s, episode steps: 1726, steps per second: 165, episode reward: -14.000, mean
141264/1500000: episode: 125, duration: 9.276s, episode steps: 1523, steps per second: 164, episode reward: -17.000, mean
142771/1500000: episode: 126, duration: 9.018s, episode steps: 1507, steps per second: 167, episode reward: -16.000, mean
144285/1500000: episode: 127, duration: 9.063s, episode steps: 1514, steps per second: 167, episode reward: -16.000, mean
146543/1500000: episode: 128, duration: 13.480s, episode steps: 2258, steps per second: 168, episode reward: -11.000, mean
148230/1500000: episode: 129, duration: 9.902s, episode steps: 1687, steps per second: 170, episode reward: -17.000, mean
149942/1500000: episode: 130, duration: 10.222s, episode steps: 1712, steps per second: 167, episode reward: -14.000, mean
151951/1500000: episode: 131, duration: 11.982s, episode steps: 2009, steps per second: 168, episode reward: -13.000, mean
154048/1500000: episode: 132, duration: 12.588s, episode steps: 2097, steps per second: 167, episode reward: -10.000, mean
155846/1500000: episode: 133, duration: 10.718s, episode steps: 1798, steps per second: 168, episode reward: -15.000, mean
157729/1500000: episode: 134, duration: 11.280s, episode steps: 1883, steps per second: 167, episode reward: -15.000, mean
159705/1500000: episode: 135, duration: 11.834s, episode steps: 1976, steps per second: 167, episode reward: -13.000, mean
161036/1500000: episode: 136, duration: 7.938s, episode steps: 1331, steps per second: 168, episode reward: -17.000, mean
162819/1500000: episode: 137, duration: 10.650s, episode steps: 1783, steps per second: 167, episode reward: -16.000, mean
164329/1500000: episode: 138, duration: 9.038s, episode steps: 1510, steps per second: 167, episode reward: -16.000, mean
165887/1500000: episode: 139, duration: 9.393s, episode steps: 1558, steps per second: 166, episode reward: -18.000, mean
167410/1500000: episode: 140, duration: 9.345s, episode steps: 1523, steps per second: 163, episode reward: -17.000, mean
169243/1500000: episode: 141, duration: 11.098s, episode steps: 1833, steps per second: 165, episode reward: -12.000, mean
171169/1500000: episode: 142, duration: 11.678s, episode steps: 1926, steps per second: 165, episode reward: -13.000, mean
172628/1500000: episode: 143, duration: 8.901s, episode steps: 1459, steps per second: 164, episode reward: -21.000, mean
174169/1500000: episode: 144, duration: 9.414s, episode steps: 1541, steps per second: 164, episode reward: -17.000, mean
175447/1500000: episode: 145, duration: 7.785s, episode steps: 1278, steps per second: 164, episode reward: -20.000, mean
176957/1500000: episode: 146, duration: 9.208s, episode steps: 1510, steps per second: 164, episode reward: -16.000, mean
178413/1500000: episode: 147, duration: 8.943s, episode steps: 1456, steps per second: 163, episode reward: -18.000, mean
180028/1500000: episode: 148, duration: 9.928s, episode steps: 1615, steps per second: 163, episode reward: -16.000, mean
181499/1500000: episode: 149, duration: 9.077s, episode steps: 1471, steps per second: 162, episode reward: -19.000, mean
183685/1500000: episode: 150, duration: 13.384s, episode steps: 2186, steps per second: 163, episode reward: -12.000, mean
184740/1500000: episode: 151, duration: 6.481s, episode steps: 1055, steps per second: 163, episode reward: -21.000, mean
186303/1500000: episode: 152, duration: 9.699s, episode steps: 1563, steps per second: 161, episode reward: -15.000, mean
188202/1500000: episode: 153, duration: 11.623s, episode steps: 1899, steps per second: 163, episode reward: -14.000, mean
190200/1500000: episode: 154, duration: 12.257s, episode steps: 1998, steps per second: 163, episode reward: -13.000, mean
191453/1500000: episode: 155, duration: 7.965s, episode steps: 1253, steps per second: 157, episode reward: -18.000, mean
193691/1500000: episode: 156, duration: 13.907s, episode steps: 2238, steps per second: 161, episode reward: -10.000, mean
195507/1500000: episode: 157, duration: 11.264s, episode steps: 1816, steps per second: 161, episode reward: -15.000, mean
197081/1500000: episode: 158, duration: 9.878s, episode steps: 1574, steps per second: 159, episode reward: -16.000, mean
198973/1500000: episode: 159, duration: 11.908s, episode steps: 1892, steps per second: 159, episode reward: -14.000, mean
200932/1500000: episode: 160, duration: 12.215s, episode steps: 1959, steps per second: 160, episode reward: -13.000, mean
202661/1500000: episode: 161, duration: 10.870s, episode steps: 1729, steps per second: 159, episode reward: -13.000, mean
204646/1500000: episode: 162, duration: 12.474s, episode steps: 1985, steps per second: 159, episode reward: -11.000, mean
206664/1500000: episode: 163, duration: 12.522s, episode steps: 2018, steps per second: 161, episode reward: -12.000, mean
208693/1500000: episode: 164, duration: 12.658s, episode steps: 2029, steps per second: 160, episode reward: -11.000, mean
210864/1500000: episode: 165, duration: 13.629s, episode steps: 2171, steps per second: 159, episode reward: -12.000, mean
212459/1500000: episode: 166, duration: 9.953s, episode steps: 1595, steps per second: 160, episode reward: -15.000, mean
214231/1500000: episode: 167, duration: 10.830s, episode steps: 1772, steps per second: 164, episode reward: -13.000, mean
215492/1500000: episode: 168, duration: 7.830s, episode steps: 1261, steps per second: 161, episode reward: -17.000, mean
217619/1500000: episode: 169, duration: 13.285s, episode steps: 2127, steps per second: 160, episode reward: -10.000, mean
218907/1500000: episode: 170, duration: 8.010s, episode steps: 1288, steps per second: 161, episode reward: -17.000, mean
220459/1500000: episode: 171, duration: 9.601s, episode steps: 1552, steps per second: 162, episode reward: -16.000, mean
222382/1500000: episode: 172, duration: 11.952s, episode steps: 1923, steps per second: 161, episode reward: -11.000, mean
224789/1500000: episode: 173, duration: 14.697s, episode steps: 2407, steps per second: 164, episode reward: -9.000, mean
227125/1500000: episode: 174, duration: 14.244s, episode steps: 2336, steps per second: 164, episode reward: -11.000, mean
228981/1500000: episode: 175, duration: 11.331s, episode steps: 1856, steps per second: 164, episode reward: -13.000, mean
230801/1500000: episode: 176, duration: 11.078s, episode steps: 1820, steps per second: 164, episode reward: -14.000, mean
232885/1500000: episode: 177, duration: 12.580s, episode steps: 2084, steps per second: 166, episode reward: -12.000, mean
235099/1500000: episode: 178, duration: 13.339s, episode steps: 2214, steps per second: 166, episode reward: -10.000, mean
237599/1500000: episode: 179, duration: 15.246s, episode steps: 2500, steps per second: 164, episode reward: -5.000, mean
239579/1500000: episode: 180, duration: 12.239s, episode steps: 1980, steps per second: 162, episode reward: -14.000, mean
241676/1500000: episode: 181, duration: 13.191s, episode steps: 2097, steps per second: 159, episode reward: -10.000, mean
243698/1500000: episode: 182, duration: 12.430s, episode steps: 2022, steps per second: 163, episode reward: -11.000, mean
245604/1500000: episode: 183, duration: 11.667s, episode steps: 1906, steps per second: 163, episode reward: -13.000, mean
247383/1500000: episode: 184, duration: 11.014s, episode steps: 1779, steps per second: 162, episode reward: -15.000, mean
249648/1500000: episode: 185, duration: 14.010s, episode steps: 2265, steps per second: 162, episode reward: -9.000, mean
251810/1500000: episode: 186, duration: 13.454s, episode steps: 2162, steps per second: 161, episode reward: -13.000, mean
253669/1500000: episode: 187, duration: 11.564s, episode steps: 1859, steps per second: 161, episode reward: -13.000, mean
255845/1500000: episode: 188, duration: 13.238s, episode steps: 2176, steps per second: 164, episode reward: -10.000, mean
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257389/1500000: episode: 189, duration: 9.418s, episode steps: 1544, steps per second: 164, episode reward: -16.000, mean
259215/1500000: episode: 190, duration: 11.096s, episode steps: 1826, steps per second: 165, episode reward: -13.000, mean
261469/1500000: episode: 191, duration: 13.686s, episode steps: 2254, steps per second: 165, episode reward: -11.000, mean
263801/1500000: episode: 192, duration: 14.324s, episode steps: 2332, steps per second: 163, episode reward: -9.000, mean
266156/1500000: episode: 193, duration: 14.319s, episode steps: 2355, steps per second: 164, episode reward: -6.000, mean
268714/1500000: episode: 194, duration: 15.461s, episode steps: 2558, steps per second: 165, episode reward: -8.000, mean
271108/1500000: episode: 195, duration: 14.517s, episode steps: 2394, steps per second: 165, episode reward: -9.000, mean
273244/1500000: episode: 196, duration: 12.980s, episode steps: 2136, steps per second: 165, episode reward: -10.000, mean
275071/1500000: episode: 197, duration: 11.023s, episode steps: 1827, steps per second: 166, episode reward: -12.000, mean
277730/1500000: episode: 198, duration: 16.173s, episode steps: 2659, steps per second: 164, episode reward: -7.000, mean
280032/1500000: episode: 199, duration: 13.884s, episode steps: 2302, steps per second: 166, episode reward: -9.000, mean
282053/1500000: episode: 200, duration: 12.246s, episode steps: 2021, steps per second: 165, episode reward: -14.000, mean
284279/1500000: episode: 201, duration: 13.541s, episode steps: 2226, steps per second: 164, episode reward: -10.000, mean
286380/1500000: episode: 202, duration: 12.767s, episode steps: 2101, steps per second: 165, episode reward: -11.000, mean
288996/1500000: episode: 203, duration: 15.877s, episode steps: 2616, steps per second: 165, episode reward: -8.000, mean
290911/1500000: episode: 204, duration: 11.783s, episode steps: 1915, steps per second: 163, episode reward: -15.000, mean
292789/1500000: episode: 205, duration: 11.649s, episode steps: 1878, steps per second: 161, episode reward: -13.000, mean
295006/1500000: episode: 206, duration: 13.503s, episode steps: 2217, steps per second: 164, episode reward: -8.000, mean
296699/1500000: episode: 207, duration: 10.164s, episode steps: 1693, steps per second: 167, episode reward: -15.000, mean
298684/1500000: episode: 208, duration: 11.924s, episode steps: 1985, steps per second: 166, episode reward: -12.000, mean
301069/1500000: episode: 209, duration: 14.400s, episode steps: 2385, steps per second: 166, episode reward: -9.000, mean
302945/1500000: episode: 210, duration: 11.450s, episode steps: 1876, steps per second: 164, episode reward: -11.000, mean
304462/1500000: episode: 211, duration: 9.348s, episode steps: 1517, steps per second: 162, episode reward: -19.000, mean
305792/1500000: episode: 212, duration: 8.096s, episode steps: 1330, steps per second: 164, episode reward: -19.000, mean
307053/1500000: episode: 213, duration: 7.612s, episode steps: 1261, steps per second: 166, episode reward: -19.000, mean
309338/1500000: episode: 214, duration: 13.972s, episode steps: 2285, steps per second: 164, episode reward: -8.000, mean
311314/1500000: episode: 215, duration: 12.055s, episode steps: 1976, steps per second: 164, episode reward: -13.000, mean
313073/1500000: episode: 216, duration: 10.803s, episode steps: 1759, steps per second: 163, episode reward: -14.000, mean
315578/1500000: episode: 217, duration: 15.437s, episode steps: 2505, steps per second: 162, episode reward: -9.000, mean
317782/1500000: episode: 218, duration: 13.599s, episode steps: 2204, steps per second: 162, episode reward: -12.000, mean
320264/1500000: episode: 219, duration: 15.053s, episode steps: 2482, steps per second: 165, episode reward: -7.000, mean
322601/1500000: episode: 220, duration: 14.096s, episode steps: 2337, steps per second: 166, episode reward: -9.000, mean
324820/1500000: episode: 221, duration: 13.528s, episode steps: 2219, steps per second: 164, episode reward: -10.000, mean
326657/1500000: episode: 222, duration: 11.149s, episode steps: 1837, steps per second: 165, episode reward: -15.000, mean
328929/1500000: episode: 223, duration: 13.924s, episode steps: 2272, steps per second: 163, episode reward: -11.000, mean
330659/1500000: episode: 224, duration: 10.611s, episode steps: 1730, steps per second: 163, episode reward: -14.000, mean
333055/1500000: episode: 225, duration: 14.587s, episode steps: 2396, steps per second: 164, episode reward: -8.000, mean
335164/1500000: episode: 226, duration: 12.875s, episode steps: 2109, steps per second: 164, episode reward: -11.000, mean
337953/1500000: episode: 227, duration: 16.891s, episode steps: 2789, steps per second: 165, episode reward: -6.000, mean
340192/1500000: episode: 228, duration: 13.604s, episode steps: 2239, steps per second: 165, episode reward: -7.000, mean
342776/1500000: episode: 229, duration: 16.033s, episode steps: 2584, steps per second: 161, episode reward: -11.000, mean
344121/1500000: episode: 230, duration: 8.262s, episode steps: 1345, steps per second: 163, episode reward: -15.000, mean
346423/1500000: episode: 231, duration: 13.941s, episode steps: 2302, steps per second: 165, episode reward: -10.000, mean
348594/1500000: episode: 232, duration: 13.170s, episode steps: 2171, steps per second: 165, episode reward: -11.000, mean
350968/1500000: episode: 233, duration: 14.449s, episode steps: 2374, steps per second: 164, episode reward: -10.000, mean
353014/1500000: episode: 234, duration: 12.646s, episode steps: 2046, steps per second: 162, episode reward: -14.000, mean
355191/1500000: episode: 235, duration: 13.347s, episode steps: 2177, steps per second: 163, episode reward: -12.000, mean
357551/1500000: episode: 236, duration: 14.437s, episode steps: 2360, steps per second: 163, episode reward: -11.000, mean
360082/1500000: episode: 237, duration: 15.479s, episode steps: 2531, steps per second: 164, episode reward: -7.000, mean
362739/1500000: episode: 238, duration: 15.984s, episode steps: 2657, steps per second: 166, episode reward: -5.000, mean
364881/1500000: episode: 239, duration: 12.850s, episode steps: 2142, steps per second: 167, episode reward: -13.000, mean
367449/1500000: episode: 240, duration: 15.562s, episode steps: 2568, steps per second: 165, episode reward: -5.000, mean
370182/1500000: episode: 241, duration: 16.712s, episode steps: 2733, steps per second: 164, episode reward: -1.000, mean
372345/1500000: episode: 242, duration: 13.158s, episode steps: 2163, steps per second: 164, episode reward: -9.000, mean
374444/1500000: episode: 243, duration: 12.767s, episode steps: 2099, steps per second: 164, episode reward: -9.000, mean
376617/1500000: episode: 244, duration: 13.327s, episode steps: 2173, steps per second: 163, episode reward: -13.000, mean
378351/1500000: episode: 245, duration: 10.660s, episode steps: 1734, steps per second: 163, episode reward: -12.000, mean
380210/1500000: episode: 246, duration: 11.451s, episode steps: 1859, steps per second: 162, episode reward: -13.000, mean
382785/1500000: episode: 247, duration: 15.981s, episode steps: 2575, steps per second: 161, episode reward: -5.000, mean
385767/1500000: episode: 248, duration: 18.178s, episode steps: 2982, steps per second: 164, episode reward: 1.000, mean
387973/1500000: episode: 249, duration: 13.468s, episode steps: 2206, steps per second: 164, episode reward: -12.000, mean
390313/1500000: episode: 250, duration: 14.274s, episode steps: 2340, steps per second: 164, episode reward: -9.000, mean
393325/1500000: episode: 251, duration: 18.717s, episode steps: 3012, steps per second: 161, episode reward: -1.000, mean
395751/1500000: episode: 252, duration: 14.929s, episode steps: 2426, steps per second: 163, episode reward: -6.000, mean
397286/1500000: episode: 253, duration: 9.422s, episode steps: 1535, steps per second: 163, episode reward: -14.000, mean
399262/1500000: episode: 254, duration: 12.009s, episode steps: 1976, steps per second: 165, episode reward: -10.000, mean
401963/1500000: episode: 255, duration: 16.476s, episode steps: 2701, steps per second: 164, episode reward: -2.000, mean
402957/1500000: episode: 256, duration: 6.148s, episode steps: 994, steps per second: 162, episode reward: -20.000, mean
405811/1500000: episode: 257, duration: 17.396s, episode steps: 2854, steps per second: 164, episode reward: -6.000, mean
408690/1500000: episode: 258, duration: 17.661s, episode steps: 2879, steps per second: 163, episode reward: -9.000, mean
411590/1500000: episode: 259, duration: 17.731s, episode steps: 2900, steps per second: 164, episode reward: 4.000, mean
413930/1500000: episode: 260, duration: 14.196s, episode steps: 2340, steps per second: 165, episode reward: -13.000, mean
415517/1500000: episode: 261, duration: 9.700s, episode steps: 1587, steps per second: 164, episode reward: -17.000, mean
418830/1500000: episode: 262, duration: 20.297s, episode steps: 3313, steps per second: 163, episode reward: -1.000, mean
421616/1500000: episode: 263, duration: 17.220s, episode steps: 2786, steps per second: 162, episode reward: -9.000, mean
424252/1500000: episode: 264, duration: 16.142s, episode steps: 2636, steps per second: 163, episode reward: -7.000, mean
427138/1500000: episode: 265, duration: 17.614s, episode steps: 2886, steps per second: 164, episode reward: 5.000, mean
430205/1500000: episode: 266, duration: 18.734s, episode steps: 3067, steps per second: 164, episode reward: -2.000, mean
432108/1500000: episode: 267, duration: 11.695s, episode steps: 1903, steps per second: 163, episode reward: -13.000, mean
434671/1500000: episode: 268, duration: 15.714s, episode steps: 2563, steps per second: 163, episode reward: -4.000, mean
436744/1500000: episode: 269, duration: 12.511s, episode steps: 2073, steps per second: 166, episode reward: -11.000, mean
439308/1500000: episode: 270, duration: 15.446s, episode steps: 2564, steps per second: 166, episode reward: -3.000, mean
442042/1500000: episode: 271, duration: 16.204s, episode steps: 2734, steps per second: 169, episode reward: -5.000, mean
443869/1500000: episode: 272, duration: 11.140s, episode steps: 1827, steps per second: 164, episode reward: -15.000, mean
446783/1500000: episode: 273, duration: 17.662s, episode steps: 2914, steps per second: 165, episode reward: -1.000, mean
449365/1500000: episode: 274, duration: 15.629s, episode steps: 2582, steps per second: 165, episode reward: -7.000, mean
450943/1500000: episode: 275, duration: 9.456s, episode steps: 1578, steps per second: 167, episode reward: -18.000, mean
453821/1500000: episode: 276, duration: 17.362s, episode steps: 2878, steps per second: 166, episode reward: 1.000, mean
456453/1500000: episode: 277, duration: 15.799s, episode steps: 2632, steps per second: 167, episode reward: 2.000, mean
458903/1500000: episode: 278, duration: 14.752s, episode steps: 2450, steps per second: 166, episode reward: 9.000, mean
461603/1500000: episode: 279, duration: 16.306s, episode steps: 2700, steps per second: 166, episode reward: -3.000, mean
464081/1500000: episode: 280, duration: 14.845s, episode steps: 2478, steps per second: 167, episode reward: -5.000, mean
466229/1500000: episode: 281, duration: 12.801s, episode steps: 2148, steps per second: 168, episode reward: -8.000, mean
468844/1500000: episode: 282, duration: 15.461s, episode steps: 2615, steps per second: 169, episode reward: -3.000, mean
470950/1500000: episode: 283, duration: 12.494s, episode steps: 2106, steps per second: 169, episode reward: -11.000, mean
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473421/1500000: episode: 284, duration: 14.617s, episode steps: 2471, steps per second: 169, episode reward: -8.000, mean
476233/1500000: episode: 285, duration: 16.795s, episode steps: 2812, steps per second: 167, episode reward: -3.000, mean
478741/1500000: episode: 286, duration: 14.982s, episode steps: 2508, steps per second: 167, episode reward: 6.000, mean
481511/1500000: episode: 287, duration: 16.736s, episode steps: 2770, steps per second: 166, episode reward: 4.000, mean
483722/1500000: episode: 288, duration: 13.250s, episode steps: 2211, steps per second: 167, episode reward: -8.000, mean
486002/1500000: episode: 289, duration: 13.796s, episode steps: 2280, steps per second: 165, episode reward: -11.000, mean
488782/1500000: episode: 290, duration: 16.832s, episode steps: 2780, steps per second: 165, episode reward: -5.000, mean
491181/1500000: episode: 291, duration: 14.675s, episode steps: 2399, steps per second: 163, episode reward: 7.000, mean
493408/1500000: episode: 292, duration: 13.555s, episode steps: 2227, steps per second: 164, episode reward: -9.000, mean
495506/1500000: episode: 293, duration: 13.113s, episode steps: 2098, steps per second: 160, episode reward: -11.000, mean
498519/1500000: episode: 294, duration: 18.540s, episode steps: 3013, steps per second: 163, episode reward: 1.000, mean
501460/1500000: episode: 295, duration: 18.066s, episode steps: 2941, steps per second: 163, episode reward: -4.000, mean
503723/1500000: episode: 296, duration: 13.900s, episode steps: 2263, steps per second: 163, episode reward: 13.000, mean
506869/1500000: episode: 297, duration: 19.003s, episode steps: 3146, steps per second: 166, episode reward: -2.000, mean
509428/1500000: episode: 298, duration: 15.624s, episode steps: 2559, steps per second: 164, episode reward: 8.000, mean
512491/1500000: episode: 299, duration: 18.837s, episode steps: 3063, steps per second: 163, episode reward: -4.000, mean
515665/1500000: episode: 300, duration: 19.438s, episode steps: 3174, steps per second: 163, episode reward: -1.000, mean
516886/1500000: episode: 301, duration: 7.289s, episode steps: 1221, steps per second: 168, episode reward: -19.000, mean
519446/1500000: episode: 302, duration: 15.296s, episode steps: 2560, steps per second: 167, episode reward: -8.000, mean
521770/1500000: episode: 303, duration: 13.900s, episode steps: 2324, steps per second: 167, episode reward: 10.000, mean
524228/1500000: episode: 304, duration: 14.651s, episode steps: 2458, steps per second: 168, episode reward: -8.000, mean
526834/1500000: episode: 305, duration: 15.677s, episode steps: 2606, steps per second: 166, episode reward: -7.000, mean
529670/1500000: episode: 306, duration: 17.046s, episode steps: 2836, steps per second: 166, episode reward: 1.000, mean
532298/1500000: episode: 307, duration: 15.810s, episode steps: 2628, steps per second: 166, episode reward: 7.000, mean
535326/1500000: episode: 308, duration: 18.046s, episode steps: 3028, steps per second: 168, episode reward: -1.000, mean
537708/1500000: episode: 309, duration: 14.288s, episode steps: 2382, steps per second: 167, episode reward: 12.000, mean
540642/1500000: episode: 310, duration: 17.615s, episode steps: 2934, steps per second: 167, episode reward: 5.000, mean
542910/1500000: episode: 311, duration: 13.618s, episode steps: 2268, steps per second: 167, episode reward: -10.000, mean
545204/1500000: episode: 312, duration: 13.798s, episode steps: 2294, steps per second: 166, episode reward: -10.000, mean
547544/1500000: episode: 313, duration: 14.254s, episode steps: 2340, steps per second: 164, episode reward: 13.000, mean
550096/1500000: episode: 314, duration: 15.020s, episode steps: 2552, steps per second: 170, episode reward: -10.000, mean
552698/1500000: episode: 315, duration: 15.673s, episode steps: 2602, steps per second: 166, episode reward: 8.000, mean
555670/1500000: episode: 316, duration: 18.002s, episode steps: 2972, steps per second: 165, episode reward: 5.000, mean
557918/1500000: episode: 317, duration: 13.480s, episode steps: 2248, steps per second: 167, episode reward: 15.000, mean
561114/1500000: episode: 318, duration: 19.035s, episode steps: 3196, steps per second: 168, episode reward: 3.000, mean
563510/1500000: episode: 319, duration: 14.257s, episode steps: 2396, steps per second: 168, episode reward: 12.000, mean
565912/1500000: episode: 320, duration: 14.396s, episode steps: 2402, steps per second: 167, episode reward: -8.000, mean
568801/1500000: episode: 321, duration: 17.309s, episode steps: 2889, steps per second: 167, episode reward: -1.000, mean
571638/1500000: episode: 322, duration: 16.709s, episode steps: 2837, steps per second: 170, episode reward: -1.000, mean
574833/1500000: episode: 323, duration: 18.980s, episode steps: 3195, steps per second: 168, episode reward: 3.000, mean
577744/1500000: episode: 324, duration: 17.476s, episode steps: 2911, steps per second: 167, episode reward: 2.000, mean
580139/1500000: episode: 325, duration: 14.425s, episode steps: 2395, steps per second: 166, episode reward: 8.000, mean
582916/1500000: episode: 326, duration: 16.630s, episode steps: 2777, steps per second: 167, episode reward: -5.000, mean
585541/1500000: episode: 327, duration: 15.752s, episode steps: 2625, steps per second: 167, episode reward: 8.000, mean
588108/1500000: episode: 328, duration: 15.289s, episode steps: 2567, steps per second: 168, episode reward: 4.000, mean
590373/1500000: episode: 329, duration: 13.540s, episode steps: 2265, steps per second: 167, episode reward: 9.000, mean
592492/1500000: episode: 330, duration: 12.668s, episode steps: 2119, steps per second: 167, episode reward: 15.000, mean
595404/1500000: episode: 331, duration: 17.461s, episode steps: 2912, steps per second: 167, episode reward: -5.000, mean
598194/1500000: episode: 332, duration: 16.922s, episode steps: 2790, steps per second: 165, episode reward: 8.000, mean
601047/1500000: episode: 333, duration: 17.060s, episode steps: 2853, steps per second: 167, episode reward: 5.000, mean
604164/1500000: episode: 334, duration: 18.550s, episode steps: 3117, steps per second: 168, episode reward: 1.000, mean
606302/1500000: episode: 335, duration: 12.866s, episode steps: 2138, steps per second: 166, episode reward: 15.000, mean
609118/1500000: episode: 336, duration: 16.740s, episode steps: 2816, steps per second: 168, episode reward: -4.000, mean
612320/1500000: episode: 337, duration: 19.107s, episode steps: 3202, steps per second: 168, episode reward: -1.000, mean
615023/1500000: episode: 338, duration: 16.072s, episode steps: 2703, steps per second: 168, episode reward: 6.000, mean
617225/1500000: episode: 339, duration: 13.084s, episode steps: 2202, steps per second: 168, episode reward: -7.000, mean
619618/1500000: episode: 340, duration: 14.164s, episode steps: 2393, steps per second: 169, episode reward: -4.000, mean
621859/1500000: episode: 341, duration: 13.440s, episode steps: 2241, steps per second: 167, episode reward: 13.000, mean
624675/1500000: episode: 342, duration: 16.699s, episode steps: 2816, steps per second: 169, episode reward: 7.000, mean
626982/1500000: episode: 343, duration: 13.826s, episode steps: 2307, steps per second: 167, episode reward: 9.000, mean
629552/1500000: episode: 344, duration: 15.325s, episode steps: 2570, steps per second: 168, episode reward: -4.000, mean
632389/1500000: episode: 345, duration: 17.002s, episode steps: 2837, steps per second: 167, episode reward: 4.000, mean
634748/1500000: episode: 346, duration: 14.120s, episode steps: 2359, steps per second: 167, episode reward: -5.000, mean
637229/1500000: episode: 347, duration: 14.850s, episode steps: 2481, steps per second: 167, episode reward: 9.000, mean
640055/1500000: episode: 348, duration: 16.780s, episode steps: 2826, steps per second: 168, episode reward: 3.000, mean
642727/1500000: episode: 349, duration: 15.854s, episode steps: 2672, steps per second: 169, episode reward: -5.000, mean
644922/1500000: episode: 350, duration: 12.936s, episode steps: 2195, steps per second: 170, episode reward: 11.000, mean
647326/1500000: episode: 351, duration: 14.353s, episode steps: 2404, steps per second: 167, episode reward: 8.000, mean
649734/1500000: episode: 352, duration: 14.582s, episode steps: 2408, steps per second: 165, episode reward: -8.000, mean
651793/1500000: episode: 353, duration: 12.443s, episode steps: 2059, steps per second: 165, episode reward: 16.000, mean
654574/1500000: episode: 354, duration: 16.569s, episode steps: 2781, steps per second: 168, episode reward: -4.000, mean
656781/1500000: episode: 355, duration: 13.301s, episode steps: 2207, steps per second: 166, episode reward: -11.000, mean
659608/1500000: episode: 356, duration: 16.863s, episode steps: 2827, steps per second: 168, episode reward: -1.000, mean
662493/1500000: episode: 357, duration: 17.375s, episode steps: 2885, steps per second: 166, episode reward: 8.000, mean
665008/1500000: episode: 358, duration: 15.048s, episode steps: 2515, steps per second: 167, episode reward: 9.000, mean
668358/1500000: episode: 359, duration: 20.114s, episode steps: 3350, steps per second: 167, episode reward: -2.000, mean
671593/1500000: episode: 360, duration: 19.285s, episode steps: 3235, steps per second: 168, episode reward: 3.000, mean
674081/1500000: episode: 361, duration: 14.902s, episode steps: 2488, steps per second: 167, episode reward: 8.000, mean
675805/1500000: episode: 362, duration: 10.331s, episode steps: 1724, steps per second: 167, episode reward: 20.000, mean
678444/1500000: episode: 363, duration: 15.892s, episode steps: 2639, steps per second: 166, episode reward: 9.000, mean
680795/1500000: episode: 364, duration: 14.099s, episode steps: 2351, steps per second: 167, episode reward: 10.000, mean
684112/1500000: episode: 365, duration: 19.720s, episode steps: 3317, steps per second: 168, episode reward: 1.000, mean
686759/1500000: episode: 366, duration: 15.844s, episode steps: 2647, steps per second: 167, episode reward: 7.000, mean
688824/1500000: episode: 367, duration: 12.485s, episode steps: 2065, steps per second: 165, episode reward: 13.000, mean
691698/1500000: episode: 368, duration: 17.196s, episode steps: 2874, steps per second: 167, episode reward: 6.000, mean
694477/1500000: episode: 369, duration: 16.597s, episode steps: 2779, steps per second: 167, episode reward: -3.000, mean
697090/1500000: episode: 370, duration: 15.551s, episode steps: 2613, steps per second: 168, episode reward: -5.000, mean
699073/1500000: episode: 371, duration: 11.873s, episode steps: 1983, steps per second: 167, episode reward: -13.000, mean
701263/1500000: episode: 372, duration: 13.321s, episode steps: 2190, steps per second: 164, episode reward: 12.000, mean
704194/1500000: episode: 373, duration: 17.599s, episode steps: 2931, steps per second: 167, episode reward: 3.000, mean
706171/1500000: episode: 374, duration: 11.886s, episode steps: 1977, steps per second: 166, episode reward: 16.000, mean
708326/1500000: episode: 375, duration: 12.827s, episode steps: 2155, steps per second: 168, episode reward: 12.000, mean
710319/1500000: episode: 376, duration: 12.035s, episode steps: 1993, steps per second: 166, episode reward: 14.000, mean
712780/1500000: episode: 377, duration: 14.738s, episode steps: 2461, steps per second: 167, episode reward: 7.000, mean
715111/1500000: episode: 378, duration: 13.999s, episode steps: 2331, steps per second: 167, episode reward: 8.000, mean
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715111/1500000: episode: 378, duration: 15.999s, episode steps: 2551, steps per second: 167, episode reward: 6.000, mean 1
717834/1500000: episode: 379, duration: 16.180s, episode steps: 2723, steps per second: 168, episode reward: 5.000, mean 1
720066/1500000: episode: 380, duration: 13.390s, episode steps: 2232, steps per second: 167, episode reward: 12.000, mean
722683/1500000: episode: 381, duration: 15.633s, episode steps: 2617, steps per second: 167, episode reward: 6.000, mean 1
725699/1500000: episode: 382, duration: 17.923s, episode steps: 3016, steps per second: 168, episode reward: -1.000, mean
727939/1500000: episode: 383, duration: 13.447s, episode steps: 2240, steps per second: 167, episode reward: 12.000, mean
730589/1500000: episode: 384, duration: 15.841s, episode steps: 2650, steps per second: 167, episode reward: -4.000, mean
733153/1500000: episode: 385, duration: 15.314s, episode steps: 2564, steps per second: 167, episode reward: 10.000, mean
736026/1500000: episode: 386, duration: 17.028s, episode steps: 2873, steps per second: 169, episode reward: 5.000, mean 1
738484/1500000: episode: 387, duration: 14.591s, episode steps: 2458, steps per second: 168, episode reward: 5.000, mean 1
740546/1500000: episode: 388, duration: 12.312s, episode steps: 2062, steps per second: 167, episode reward: 15.000, mean
743446/1500000: episode: 389, duration: 17.826s, episode steps: 2900, steps per second: 163, episode reward: 1.000, mean 1
746432/1500000: episode: 390, duration: 17.879s, episode steps: 2986, steps per second: 167, episode reward: 4.000, mean 1
748951/1500000: episode: 391, duration: 15.030s, episode steps: 2519, steps per second: 168, episode reward: 10.000, mean
751309/1500000: episode: 392, duration: 14.154s, episode steps: 2358, steps per second: 167, episode reward: 9.000, mean 1
753549/1500000: episode: 393, duration: 13.722s, episode steps: 2240, steps per second: 163, episode reward: 10.000, mean
756366/1500000: episode: 394, duration: 16.972s, episode steps: 2817, steps per second: 166, episode reward: 3.000, mean 1
759005/1500000: episode: 395, duration: 15.838s, episode steps: 2639, steps per second: 167, episode reward: 7.000, mean 1
761746/1500000: episode: 396, duration: 16.299s, episode steps: 2741, steps per second: 168, episode reward: -6.000, mean
764720/1500000: episode: 397, duration: 17.674s, episode steps: 2974, steps per second: 168, episode reward: 4.000, mean 1
766951/1500000: episode: 398, duration: 13.300s, episode steps: 2231, steps per second: 168, episode reward: 13.000, mean
769609/1500000: episode: 399, duration: 15.815s, episode steps: 2658, steps per second: 168, episode reward: -8.000, mean
771883/1500000: episode: 400, duration: 13.437s, episode steps: 2274, steps per second: 169, episode reward: 15.000, mean
774510/1500000: episode: 401, duration: 15.612s, episode steps: 2627, steps per second: 168, episode reward: 6.000, mean 1
776680/1500000: episode: 402, duration: 12.848s, episode steps: 2170, steps per second: 169, episode reward: 14.000, mean
779050/1500000: episode: 403, duration: 14.186s, episode steps: 2370, steps per second: 167, episode reward: 13.000, mean
780694/1500000: episode: 404, duration: 9.855s, episode steps: 1644, steps per second: 167, episode reward: 21.000, mean 1
782338/1500000: episode: 405, duration: 9.982s, episode steps: 1644, steps per second: 165, episode reward: 21.000, mean 1
785166/1500000: episode: 406, duration: 17.080s, episode steps: 2828, steps per second: 166, episode reward: 5.000, mean 1
787757/1500000: episode: 407, duration: 15.802s, episode steps: 2591, steps per second: 164, episode reward: -2.000, mean
790025/1500000: episode: 408, duration: 13.859s, episode steps: 2268, steps per second: 164, episode reward: 15.000, mean
792849/1500000: episode: 409, duration: 16.920s, episode steps: 2824, steps per second: 167, episode reward: -4.000, mean
795272/1500000: episode: 410, duration: 14.886s, episode steps: 2423, steps per second: 163, episode reward: 12.000, mean
797478/1500000: episode: 411, duration: 13.286s, episode steps: 2206, steps per second: 166, episode reward: 15.000, mean
799401/1500000: episode: 412, duration: 11.679s, episode steps: 1923, steps per second: 165, episode reward: 17.000, mean
801238/1500000: episode: 413, duration: 11.080s, episode steps: 1837, steps per second: 166, episode reward: 16.000, mean
803331/1500000: episode: 414, duration: 12.825s, episode steps: 2093, steps per second: 163, episode reward: 13.000, mean
805619/1500000: episode: 415, duration: 14.293s, episode steps: 2288, steps per second: 160, episode reward: 13.000, mean
808169/1500000: episode: 416, duration: 15.664s, episode steps: 2550, steps per second: 163, episode reward: 10.000, mean
810987/1500000: episode: 417, duration: 17.017s, episode steps: 2818, steps per second: 166, episode reward: 3.000, mean 1
813715/1500000: episode: 418, duration: 16.436s, episode steps: 2728, steps per second: 166, episode reward: 5.000, mean 1
815735/1500000: episode: 419, duration: 12.147s, episode steps: 2020, steps per second: 166, episode reward: 15.000, mean
817791/1500000: episode: 420, duration: 12.275s, episode steps: 2056, steps per second: 168, episode reward: 15.000, mean
820447/1500000: episode: 421, duration: 16.192s, episode steps: 2656, steps per second: 164, episode reward: -6.000, mean
822861/1500000: episode: 422, duration: 14.485s, episode steps: 2414, steps per second: 167, episode reward: 13.000, mean
825153/1500000: episode: 423, duration: 13.677s, episode steps: 2292, steps per second: 168, episode reward: 11.000, mean
827592/1500000: episode: 424, duration: 14.531s, episode steps: 2439, steps per second: 168, episode reward: 10.000, mean
829967/1500000: episode: 425, duration: 14.245s, episode steps: 2375, steps per second: 167, episode reward: 11.000, mean
832319/1500000: episode: 426, duration: 14.094s, episode steps: 2352, steps per second: 167, episode reward: 12.000, mean
834416/1500000: episode: 427, duration: 12.714s, episode steps: 2097, steps per second: 165, episode reward: 14.000, mean
836553/1500000: episode: 428, duration: 12.747s, episode steps: 2137, steps per second: 168, episode reward: 14.000, mean
839104/1500000: episode: 429, duration: 15.236s, episode steps: 2551, steps per second: 167, episode reward: 3.000, mean 1
841188/1500000: episode: 430, duration: 12.445s, episode steps: 2084, steps per second: 167, episode reward: 13.000, mean
843178/1500000: episode: 431, duration: 11.901s, episode steps: 1990, steps per second: 167, episode reward: 15.000, mean
845063/1500000: episode: 432, duration: 11.318s, episode steps: 1885, steps per second: 167, episode reward: 17.000, mean
847883/1500000: episode: 433, duration: 16.962s, episode steps: 2820, steps per second: 166, episode reward: 5.000, mean 1
850801/1500000: episode: 434, duration: 17.463s, episode steps: 2918, steps per second: 167, episode reward: 2.000, mean 1
853108/1500000: episode: 435, duration: 13.736s, episode steps: 2307, steps per second: 168, episode reward: 10.000, mean
855805/1500000: episode: 436, duration: 16.331s, episode steps: 2697, steps per second: 165, episode reward: 7.000, mean 1
858157/1500000: episode: 437, duration: 14.268s, episode steps: 2352, steps per second: 165, episode reward: 10.000, mean
860319/1500000: episode: 438, duration: 12.677s, episode steps: 2162, steps per second: 171, episode reward: 13.000, mean
863137/1500000: episode: 439, duration: 16.922s, episode steps: 2818, steps per second: 167, episode reward: 3.000, mean 1
865706/1500000: episode: 440, duration: 15.358s, episode steps: 2569, steps per second: 167, episode reward: 6.000, mean 1
868695/1500000: episode: 441, duration: 17.902s, episode steps: 2989, steps per second: 167, episode reward: 5.000, mean 1
871411/1500000: episode: 442, duration: 16.196s, episode steps: 2716, steps per second: 168, episode reward: 8.000, mean 1
873405/1500000: episode: 443, duration: 11.906s, episode steps: 1994, steps per second: 167, episode reward: 15.000, mean
875798/1500000: episode: 444, duration: 14.278s, episode steps: 2393, steps per second: 168, episode reward: 7.000, mean 1
877752/1500000: episode: 445, duration: 11.815s, episode steps: 1954, steps per second: 165, episode reward: -12.000, mean
880245/1500000: episode: 446, duration: 14.846s, episode steps: 2493, steps per second: 168, episode reward: 11.000, mean
883031/1500000: episode: 447, duration: 16.678s, episode steps: 2786, steps per second: 167, episode reward: -2.000, mean
885386/1500000: episode: 448, duration: 14.059s, episode steps: 2355, steps per second: 168, episode reward: 12.000, mean
888087/1500000: episode: 449, duration: 16.163s, episode steps: 2701, steps per second: 167, episode reward: 6.000, mean 1
890768/1500000: episode: 450, duration: 16.001s, episode steps: 2681, steps per second: 168, episode reward: 5.000, mean 1
893126/1500000: episode: 451, duration: 14.030s, episode steps: 2358, steps per second: 168, episode reward: 15.000, mean
895444/1500000: episode: 452, duration: 13.816s, episode steps: 2318, steps per second: 168, episode reward: 11.000, mean
898242/1500000: episode: 453, duration: 16.764s, episode steps: 2798, steps per second: 167, episode reward: -4.000, mean
900420/1500000: episode: 454, duration: 12.832s, episode steps: 2178, steps per second: 170, episode reward: 13.000, mean
903215/1500000: episode: 455, duration: 16.495s, episode steps: 2795, steps per second: 169, episode reward: 4.000, mean 1
905235/1500000: episode: 456, duration: 12.084s, episode steps: 2020, steps per second: 167, episode reward: 15.000, mean
908339/1500000: episode: 457, duration: 19.062s, episode steps: 3104, steps per second: 163, episode reward: 1.000, mean 1
910562/1500000: episode: 458, duration: 13.367s, episode steps: 2223, steps per second: 166, episode reward: 13.000, mean
912860/1500000: episode: 459, duration: 13.726s, episode steps: 2298, steps per second: 167, episode reward: 9.000, mean 1
915356/1500000: episode: 460, duration: 14.943s, episode steps: 2496, steps per second: 167, episode reward: 8.000, mean 1
917551/1500000: episode: 461, duration: 13.090s, episode steps: 2195, steps per second: 168, episode reward: 12.000, mean
919869/1500000: episode: 462, duration: 13.847s, episode steps: 2318, steps per second: 167, episode reward: 10.000, mean
922613/1500000: episode: 463, duration: 16.243s, episode steps: 2744, steps per second: 169, episode reward: 7.000, mean 1
924903/1500000: episode: 464, duration: 13.625s, episode steps: 2290, steps per second: 168, episode reward: 10.000, mean
926784/1500000: episode: 465, duration: 11.203s, episode steps: 1881, steps per second: 168, episode reward: 17.000, mean
929063/1500000: episode: 466, duration: 13.573s, episode steps: 2279, steps per second: 168, episode reward: 13.000, mean
931032/1500000: episode: 467, duration: 11.737s, episode steps: 1969, steps per second: 168, episode reward: 18.000, mean
933673/1500000: episode: 468, duration: 15.721s, episode steps: 2641, steps per second: 168, episode reward: -1.000, mean
936374/1500000: episode: 469, duration: 15.992s, episode steps: 2701, steps per second: 169, episode reward: 5.000, mean 1
938901/1500000: episode: 470, duration: 14.978s, episode steps: 2527, steps per second: 169, episode reward: 7.000, mean 1
941424/1500000: episode: 471, duration: 14.945s, episode steps: 2523, steps per second: 169, episode reward: 7.000, mean 1
943979/1500000: episode: 472, duration: 14.852s, episode steps: 2555, steps per second: 172, episode reward: 7.000, mean 1
946120/1500000: episode: 473, duration: 12.640s, episode steps: 2150, steps per second: 171, episode reward: 11.000

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 946138/1500000: episode: 473, duration: 12.640s, episode steps: 2159, steps per second: 171, episode reward: 11.000, mean
 949356/1500000: episode: 474, duration: 18.866s, episode steps: 3218, steps per second: 171, episode reward: 1.000, mean
 951626/1500000: episode: 475, duration: 13.477s, episode steps: 2270, steps per second: 168, episode reward: 11.000, mean
 954256/1500000: episode: 476, duration: 15.520s, episode steps: 2630, steps per second: 169, episode reward: 5.000, mean
 957361/1500000: episode: 477, duration: 18.410s, episode steps: 3105, steps per second: 169, episode reward: 1.000, mean
 960552/1500000: episode: 478, duration: 19.270s, episode steps: 3191, steps per second: 166, episode reward: 1.000, mean
 963627/1500000: episode: 479, duration: 18.199s, episode steps: 3075, steps per second: 169, episode reward: 2.000, mean
 966257/1500000: episode: 480, duration: 15.561s, episode steps: 2630, steps per second: 169, episode reward: -9.000, mean
 969447/1500000: episode: 481, duration: 18.914s, episode steps: 3190, steps per second: 169, episode reward: -3.000, mean
 972024/1500000: episode: 482, duration: 15.313s, episode steps: 2577, steps per second: 168, episode reward: 14.000, mean
 974233/1500000: episode: 483, duration: 13.134s, episode steps: 2209, steps per second: 168, episode reward: 15.000, mean
 976726/1500000: episode: 484, duration: 14.796s, episode steps: 2493, steps per second: 168, episode reward: 12.000, mean
 978869/1500000: episode: 485, duration: 12.712s, episode steps: 2143, steps per second: 169, episode reward: 14.000, mean
 981351/1500000: episode: 486, duration: 14.764s, episode steps: 2482, steps per second: 168, episode reward: 6.000, mean
 983527/1500000: episode: 487, duration: 12.975s, episode steps: 2176, steps per second: 168, episode reward: 15.000, mean
 985590/1500000: episode: 488, duration: 12.310s, episode steps: 2063, steps per second: 168, episode reward: 15.000, mean
 987563/1500000: episode: 489, duration: 11.738s, episode steps: 1973, steps per second: 168, episode reward: 17.000, mean
 990410/1500000: episode: 490, duration: 16.778s, episode steps: 2847, steps per second: 170, episode reward: 4.000, mean
 992581/1500000: episode: 491, duration: 12.697s, episode steps: 2171, steps per second: 171, episode reward: 16.000, mean
 994524/1500000: episode: 492, duration: 11.678s, episode steps: 1943, steps per second: 166, episode reward: 17.000, mean
 996571/1500000: episode: 493, duration: 12.260s, episode steps: 2047, steps per second: 167, episode reward: 16.000, mean
 998836/1500000: episode: 494, duration: 13.509s, episode steps: 2265, steps per second: 168, episode reward: 11.000, mean
1001118/1500000: episode: 495, duration: 13.609s, episode steps: 2282, steps per second: 168, episode reward: 13.000, mean
1003234/1500000: episode: 496, duration: 12.653s, episode steps: 2116, steps per second: 167, episode reward: 13.000, mean
1005661/1500000: episode: 497, duration: 14.501s, episode steps: 2427, steps per second: 167, episode reward: 11.000, mean
1008026/1500000: episode: 498, duration: 14.032s, episode steps: 2365, steps per second: 169, episode reward: 8.000, mean
1011056/1500000: episode: 499, duration: 18.376s, episode steps: 3030, steps per second: 165, episode reward: -1.000, mean
1013595/1500000: episode: 500, duration: 15.335s, episode steps: 2539, steps per second: 166, episode reward: 8.000, mean
1016042/1500000: episode: 501, duration: 14.538s, episode steps: 2447, steps per second: 168, episode reward: 10.000, mean
1018956/1500000: episode: 502, duration: 17.293s, episode steps: 2914, steps per second: 169, episode reward: 3.000, mean
1021386/1500000: episode: 503, duration: 14.520s, episode steps: 2430, steps per second: 167, episode reward: 12.000, mean
1024061/1500000: episode: 504, duration: 16.000s, episode steps: 2675, steps per second: 167, episode reward: 4.000, mean
1025986/1500000: episode: 505, duration: 11.454s, episode steps: 1925, steps per second: 168, episode reward: 17.000, mean
1028329/1500000: episode: 506, duration: 13.941s, episode steps: 2343, steps per second: 168, episode reward: 12.000, mean
1030994/1500000: episode: 507, duration: 15.858s, episode steps: 2665, steps per second: 168, episode reward: 9.000, mean
1033610/1500000: episode: 508, duration: 15.400s, episode steps: 2616, steps per second: 170, episode reward: 5.000, mean
1035601/1500000: episode: 509, duration: 11.997s, episode steps: 1991, steps per second: 166, episode reward: 16.000, mean
1038652/1500000: episode: 510, duration: 18.187s, episode steps: 3051, steps per second: 168, episode reward: 1.000, mean
1040427/1500000: episode: 511, duration: 10.560s, episode steps: 1775, steps per second: 168, episode reward: 19.000, mean
1042718/1500000: episode: 512, duration: 13.631s, episode steps: 2291, steps per second: 168, episode reward: 15.000, mean
1044854/1500000: episode: 513, duration: 12.750s, episode steps: 2136, steps per second: 168, episode reward: 16.000, mean
1047981/1500000: episode: 514, duration: 18.641s, episode steps: 3127, steps per second: 168, episode reward: 5.000, mean
1051308/1500000: episode: 515, duration: 19.943s, episode steps: 3327, steps per second: 167, episode reward: -2.000, mean
1054558/1500000: episode: 516, duration: 19.323s, episode steps: 3250, steps per second: 168, episode reward: 2.000, mean
1057353/1500000: episode: 517, duration: 16.702s, episode steps: 2795, steps per second: 167, episode reward: 1.000, mean
1060347/1500000: episode: 518, duration: 17.860s, episode steps: 2994, steps per second: 168, episode reward: 7.000, mean
1062812/1500000: episode: 519, duration: 14.992s, episode steps: 2465, steps per second: 164, episode reward: 14.000, mean
1065636/1500000: episode: 520, duration: 17.129s, episode steps: 2824, steps per second: 165, episode reward: 7.000, mean
1068837/1500000: episode: 521, duration: 19.199s, episode steps: 3201, steps per second: 167, episode reward: -1.000, mean
1070983/1500000: episode: 522, duration: 12.911s, episode steps: 2146, steps per second: 166, episode reward: 14.000, mean
1073854/1500000: episode: 523, duration: 17.194s, episode steps: 2871, steps per second: 167, episode reward: 8.000, mean
1076295/1500000: episode: 524, duration: 14.679s, episode steps: 2441, steps per second: 166, episode reward: 9.000, mean
1078439/1500000: episode: 525, duration: 12.722s, episode steps: 2144, steps per second: 169, episode reward: 17.000, mean
1080939/1500000: episode: 526, duration: 14.870s, episode steps: 2500, steps per second: 168, episode reward: 14.000, mean
1083116/1500000: episode: 527, duration: 13.242s, episode steps: 2177, steps per second: 164, episode reward: 16.000, mean
1086134/1500000: episode: 528, duration: 18.543s, episode steps: 3018, steps per second: 163, episode reward: 7.000, mean
1088932/1500000: episode: 529, duration: 17.316s, episode steps: 2798, steps per second: 162, episode reward: 6.000, mean
1091255/1500000: episode: 530, duration: 14.186s, episode steps: 2323, steps per second: 164, episode reward: 13.000, mean
1094948/1500000: episode: 531, duration: 22.465s, episode steps: 3693, steps per second: 164, episode reward: 1.000, mean
1097554/1500000: episode: 532, duration: 15.944s, episode steps: 2606, steps per second: 163, episode reward: 6.000, mean
1100697/1500000: episode: 533, duration: 19.313s, episode steps: 3143, steps per second: 163, episode reward: 3.000, mean
1103356/1500000: episode: 534, duration: 16.435s, episode steps: 2659, steps per second: 162, episode reward: 2.000, mean
1105949/1500000: episode: 535, duration: 16.120s, episode steps: 2593, steps per second: 161, episode reward: 8.000, mean
1108951/1500000: episode: 536, duration: 18.478s, episode steps: 3002, steps per second: 162, episode reward: 5.000, mean
1111348/1500000: episode: 537, duration: 14.715s, episode steps: 2397, steps per second: 163, episode reward: 8.000, mean
1113777/1500000: episode: 538, duration: 15.131s, episode steps: 2429, steps per second: 161, episode reward: 10.000, mean
1115879/1500000: episode: 539, duration: 12.943s, episode steps: 2102, steps per second: 162, episode reward: 14.000, mean
1117935/1500000: episode: 540, duration: 12.371s, episode steps: 2056, steps per second: 166, episode reward: 14.000, mean
1120296/1500000: episode: 541, duration: 14.085s, episode steps: 2361, steps per second: 168, episode reward: 12.000, mean
1122448/1500000: episode: 542, duration: 12.668s, episode steps: 2152, steps per second: 170, episode reward: 13.000, mean
1124866/1500000: episode: 543, duration: 14.553s, episode steps: 2418, steps per second: 166, episode reward: 12.000, mean
1127718/1500000: episode: 544, duration: 17.151s, episode steps: 2852, steps per second: 166, episode reward: 10.000, mean
1130463/1500000: episode: 545, duration: 16.603s, episode steps: 2745, steps per second: 165, episode reward: 6.000, mean
1133007/1500000: episode: 546, duration: 15.259s, episode steps: 2544, steps per second: 167, episode reward: 12.000, mean
1134849/1500000: episode: 547, duration: 11.118s, episode steps: 1842, steps per second: 166, episode reward: 16.000, mean
1137253/1500000: episode: 548, duration: 14.447s, episode steps: 2404, steps per second: 166, episode reward: 8.000, mean
1139327/1500000: episode: 549, duration: 12.476s, episode steps: 2074, steps per second: 166, episode reward: 16.000, mean
1141997/1500000: episode: 550, duration: 16.028s, episode steps: 2670, steps per second: 167, episode reward: 1.000, mean
1143921/1500000: episode: 551, duration: 11.580s, episode steps: 1924, steps per second: 166, episode reward: 17.000, mean
1146386/1500000: episode: 552, duration: 14.750s, episode steps: 2465, steps per second: 167, episode reward: 10.000, mean
1148807/1500000: episode: 553, duration: 14.541s, episode steps: 2421, steps per second: 166, episode reward: 11.000, mean
1151324/1500000: episode: 554, duration: 15.149s, episode steps: 2517, steps per second: 166, episode reward: 8.000, mean
1153288/1500000: episode: 555, duration: 11.732s, episode steps: 1964, steps per second: 167, episode reward: 15.000, mean
1155351/1500000: episode: 556, duration: 12.504s, episode steps: 2063, steps per second: 165, episode reward: 16.000, mean
1157826/1500000: episode: 557, duration: 14.861s, episode steps: 2475, steps per second: 167, episode reward: 11.000, mean
1160040/1500000: episode: 558, duration: 13.395s, episode steps: 2214, steps per second: 165, episode reward: 14.000, mean
1163184/1500000: episode: 559, duration: 18.909s, episode steps: 3144, steps per second: 166, episode reward: -1.000, mean
1165223/1500000: episode: 560, duration: 12.325s, episode steps: 2039, steps per second: 165, episode reward: 15.000, mean
1167025/1500000: episode: 561, duration: 10.975s, episode steps: 1802, steps per second: 164, episode reward: -10.000, mean
1169498/1500000: episode: 562, duration: 14.943s, episode steps: 2473, steps per second: 165, episode reward: 10.000, mean
1171948/1500000: episode: 563, duration: 14.715s, episode steps: 2450, steps per second: 166, episode reward: 11.000, mean
1174443/1500000: episode: 564, duration: 14.873s, episode steps: 2495, steps per second: 168, episode reward: 12.000, mean
1176812/1500000: episode: 565, duration: 14.314s, episode steps: 2369, steps per second: 166, episode reward: 12.000, mean
1179225/1500000: episode: 566, duration: 14.593s, episode steps: 2413, steps per second: 165, episode reward: 10.000, mean
1181906/1500000: episode: 567, duration: 16.238s, episode steps: 2681, steps per second: 165, episode reward: -1.000, mean
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1183724/1500000: episode: 568, duration: 10.950s, episode steps: 1818, steps per second: 166, episode reward: 20.000, mean
1185761/1500000: episode: 569, duration: 12.339s, episode steps: 2037, steps per second: 165, episode reward: 14.000, mean
1188818/1500000: episode: 570, duration: 18.316s, episode steps: 3057, steps per second: 167, episode reward: 9.000, mean
1191834/1500000: episode: 571, duration: 18.136s, episode steps: 3016, steps per second: 166, episode reward: 2.000, mean
1193550/1500000: episode: 572, duration: 10.246s, episode steps: 1716, steps per second: 167, episode reward: 20.000, mean
1195707/1500000: episode: 573, duration: 12.937s, episode steps: 2157, steps per second: 167, episode reward: 15.000, mean
1198379/1500000: episode: 574, duration: 15.930s, episode steps: 2672, steps per second: 168, episode reward: 4.000, mean
1200666/1500000: episode: 575, duration: 13.574s, episode steps: 2287, steps per second: 168, episode reward: 13.000, mean
1203040/1500000: episode: 576, duration: 14.330s, episode steps: 2374, steps per second: 166, episode reward: 12.000, mean
1205301/1500000: episode: 577, duration: 13.502s, episode steps: 2261, steps per second: 167, episode reward: -10.000, mean
1207587/1500000: episode: 578, duration: 13.588s, episode steps: 2286, steps per second: 168, episode reward: 11.000, mean
1210969/1500000: episode: 579, duration: 20.088s, episode steps: 3382, steps per second: 168, episode reward: 4.000, mean
1214186/1500000: episode: 580, duration: 19.420s, episode steps: 3217, steps per second: 166, episode reward: 4.000, mean
1216804/1500000: episode: 581, duration: 15.746s, episode steps: 2618, steps per second: 166, episode reward: 10.000, mean
1219654/1500000: episode: 582, duration: 17.155s, episode steps: 2850, steps per second: 166, episode reward: 10.000, mean
1222154/1500000: episode: 583, duration: 14.946s, episode steps: 2500, steps per second: 167, episode reward: 14.000, mean
1224483/1500000: episode: 584, duration: 13.906s, episode steps: 2329, steps per second: 167, episode reward: 12.000, mean
1226886/1500000: episode: 585, duration: 14.282s, episode steps: 2403, steps per second: 168, episode reward: 14.000, mean
1228941/1500000: episode: 586, duration: 12.217s, episode steps: 2055, steps per second: 168, episode reward: 16.000, mean
1231630/1500000: episode: 587, duration: 15.984s, episode steps: 2689, steps per second: 168, episode reward: 8.000, mean
1233641/1500000: episode: 588, duration: 12.072s, episode steps: 2011, steps per second: 167, episode reward: 18.000, mean
1236864/1500000: episode: 589, duration: 19.294s, episode steps: 3223, steps per second: 167, episode reward: 5.000, mean
1238820/1500000: episode: 590, duration: 11.651s, episode steps: 1956, steps per second: 168, episode reward: 19.000, mean
1241415/1500000: episode: 591, duration: 15.373s, episode steps: 2595, steps per second: 169, episode reward: 12.000, mean
1243897/1500000: episode: 592, duration: 14.802s, episode steps: 2482, steps per second: 168, episode reward: 10.000, mean
1246109/1500000: episode: 593, duration: 13.065s, episode steps: 2212, steps per second: 169, episode reward: 14.000, mean
1249142/1500000: episode: 594, duration: 18.296s, episode steps: 3033, steps per second: 166, episode reward: 9.000, mean
1252677/1500000: episode: 595, duration: 20.950s, episode steps: 3535, steps per second: 169, episode reward: 4.000, mean
1255146/1500000: episode: 596, duration: 14.805s, episode steps: 2469, steps per second: 167, episode reward: 10.000, mean
1257953/1500000: episode: 597, duration: 16.783s, episode steps: 2807, steps per second: 167, episode reward: 7.000, mean
1261057/1500000: episode: 598, duration: 18.723s, episode steps: 3104, steps per second: 166, episode reward: 2.000, mean
1263227/1500000: episode: 599, duration: 13.187s, episode steps: 2170, steps per second: 165, episode reward: 16.000, mean
1265738/1500000: episode: 600, duration: 15.158s, episode steps: 2511, steps per second: 166, episode reward: 10.000, mean
1268636/1500000: episode: 601, duration: 17.634s, episode steps: 2898, steps per second: 164, episode reward: 6.000, mean
1271407/1500000: episode: 602, duration: 16.826s, episode steps: 2771, steps per second: 165, episode reward: 7.000, mean
1274414/1500000: episode: 603, duration: 18.139s, episode steps: 3007, steps per second: 166, episode reward: 7.000, mean
1276427/1500000: episode: 604, duration: 12.186s, episode steps: 2013, steps per second: 165, episode reward: 17.000, mean
1278710/1500000: episode: 605, duration: 13.802s, episode steps: 2283, steps per second: 165, episode reward: 15.000, mean
1281615/1500000: episode: 606, duration: 17.534s, episode steps: 2905, steps per second: 166, episode reward: 3.000, mean
1283448/1500000: episode: 607, duration: 11.083s, episode steps: 1833, steps per second: 165, episode reward: 17.000, mean
1286215/1500000: episode: 608, duration: 16.746s, episode steps: 2767, steps per second: 165, episode reward: 6.000, mean
1288574/1500000: episode: 609, duration: 14.250s, episode steps: 2359, steps per second: 166, episode reward: 14.000, mean
1290954/1500000: episode: 610, duration: 14.343s, episode steps: 2380, steps per second: 166, episode reward: 10.000, mean
1294003/1500000: episode: 611, duration: 18.248s, episode steps: 3049, steps per second: 167, episode reward: 2.000, mean
1295991/1500000: episode: 612, duration: 11.851s, episode steps: 1988, steps per second: 168, episode reward: 17.000, mean
1299388/1500000: episode: 613, duration: 20.390s, episode steps: 3397, steps per second: 167, episode reward: 2.000, mean
1301293/1500000: episode: 614, duration: 11.520s, episode steps: 1905, steps per second: 165, episode reward: 17.000, mean
1303280/1500000: episode: 615, duration: 12.005s, episode steps: 1987, steps per second: 166, episode reward: 17.000, mean
1305528/1500000: episode: 616, duration: 13.447s, episode steps: 2248, steps per second: 167, episode reward: 17.000, mean
1307487/1500000: episode: 617, duration: 11.715s, episode steps: 1959, steps per second: 167, episode reward: 18.000, mean
1309669/1500000: episode: 618, duration: 13.151s, episode steps: 2182, steps per second: 166, episode reward: 18.000, mean
1312098/1500000: episode: 619, duration: 14.609s, episode steps: 2429, steps per second: 166, episode reward: 11.000, mean
1315043/1500000: episode: 620, duration: 17.930s, episode steps: 2945, steps per second: 164, episode reward: 12.000, mean
1317435/1500000: episode: 621, duration: 14.473s, episode steps: 2392, steps per second: 165, episode reward: 11.000, mean
1319957/1500000: episode: 622, duration: 15.462s, episode steps: 2522, steps per second: 163, episode reward: 12.000, mean
1322078/1500000: episode: 623, duration: 12.853s, episode steps: 2121, steps per second: 165, episode reward: 15.000, mean
1323781/1500000: episode: 624, duration: 10.284s, episode steps: 1703, steps per second: 166, episode reward: 21.000, mean
1325895/1500000: episode: 625, duration: 12.733s, episode steps: 2114, steps per second: 166, episode reward: -9.000, mean
1327943/1500000: episode: 626, duration: 12.542s, episode steps: 2048, steps per second: 163, episode reward: 13.000, mean
1330628/1500000: episode: 627, duration: 16.292s, episode steps: 2685, steps per second: 165, episode reward: 5.000, mean
1332794/1500000: episode: 628, duration: 13.035s, episode steps: 2166, steps per second: 166, episode reward: 18.000, mean
1335083/1500000: episode: 629, duration: 13.673s, episode steps: 2289, steps per second: 167, episode reward: 11.000, mean
1337783/1500000: episode: 630, duration: 16.206s, episode steps: 2700, steps per second: 167, episode reward: 9.000, mean
1339538/1500000: episode: 631, duration: 10.382s, episode steps: 1755, steps per second: 169, episode reward: 19.000, mean
1341780/1500000: episode: 632, duration: 13.408s, episode steps: 2242, steps per second: 167, episode reward: 12.000, mean
1343699/1500000: episode: 633, duration: 11.576s, episode steps: 1919, steps per second: 166, episode reward: 17.000, mean
1346330/1500000: episode: 634, duration: 15.732s, episode steps: 2631, steps per second: 167, episode reward: 9.000, mean
1348953/1500000: episode: 635, duration: 15.744s, episode steps: 2623, steps per second: 167, episode reward: 8.000, mean
1352098/1500000: episode: 636, duration: 18.803s, episode steps: 3145, steps per second: 167, episode reward: -5.000, mean
1354449/1500000: episode: 637, duration: 14.124s, episode steps: 2351, steps per second: 166, episode reward: 9.000, mean
1356927/1500000: episode: 638, duration: 14.741s, episode steps: 2478, steps per second: 168, episode reward: 12.000, mean
1359400/1500000: episode: 639, duration: 14.836s, episode steps: 2473, steps per second: 167, episode reward: 9.000, mean
1361311/1500000: episode: 640, duration: 11.438s, episode steps: 1911, steps per second: 167, episode reward: 19.000, mean
1364329/1500000: episode: 641, duration: 18.174s, episode steps: 3018, steps per second: 166, episode reward: -3.000, mean
1366888/1500000: episode: 642, duration: 15.348s, episode steps: 2559, steps per second: 167, episode reward: 9.000, mean
1369259/1500000: episode: 643, duration: 14.382s, episode steps: 2371, steps per second: 165, episode reward: 3.000, mean
1370273/1500000: episode: 644, duration: 6.024s, episode steps: 1014, steps per second: 168, episode reward: -21.000, mean
1372145/1500000: episode: 645, duration: 11.464s, episode steps: 1872, steps per second: 163, episode reward: -12.000, mean
1374517/1500000: episode: 646, duration: 14.229s, episode steps: 2372, steps per second: 167, episode reward: 10.000, mean
1377000/1500000: episode: 647, duration: 14.786s, episode steps: 2483, steps per second: 168, episode reward: 11.000, mean
1379886/1500000: episode: 648, duration: 17.338s, episode steps: 2886, steps per second: 166, episode reward: 7.000, mean
1382116/1500000: episode: 649, duration: 13.384s, episode steps: 2230, steps per second: 167, episode reward: 14.000, mean
1384124/1500000: episode: 650, duration: 11.779s, episode steps: 2008, steps per second: 170, episode reward: 17.000, mean
1386582/1500000: episode: 651, duration: 14.631s, episode steps: 2458, steps per second: 168, episode reward: 11.000, mean
1388985/1500000: episode: 652, duration: 14.379s, episode steps: 2403, steps per second: 167, episode reward: 13.000, mean
1391301/1500000: episode: 653, duration: 13.903s, episode steps: 2316, steps per second: 167, episode reward: 13.000, mean
1393209/1500000: episode: 654, duration: 11.449s, episode steps: 1908, steps per second: 167, episode reward: -11.000, mean
1396083/1500000: episode: 655, duration: 17.179s, episode steps: 2874, steps per second: 167, episode reward: -3.000, mean
1398868/1500000: episode: 656, duration: 16.521s, episode steps: 2785, steps per second: 169, episode reward: 9.000, mean
1400922/1500000: episode: 657, duration: 12.299s, episode steps: 2054, steps per second: 167, episode reward: 15.000, mean
1403476/1500000: episode: 658, duration: 15.213s, episode steps: 2554, steps per second: 168, episode reward: 9.000, mean
1405546/1500000: episode: 659, duration: 12.378s, episode steps: 2070, steps per second: 167, episode reward: 17.000, mean
1408493/1500000: episode: 660, duration: 17.606s, episode steps: 2947, steps per second: 167, episode reward: -1.000, mean
1411833/1500000: episode: 661, duration: 20.071s, episode steps: 3340, steps per second: 166, episode reward: -1.000, mean
1414428/1500000: episode: 662, duration: 15.518s, episode steps: 2595, steps per second: 167, episode reward: -1.000, mean
```
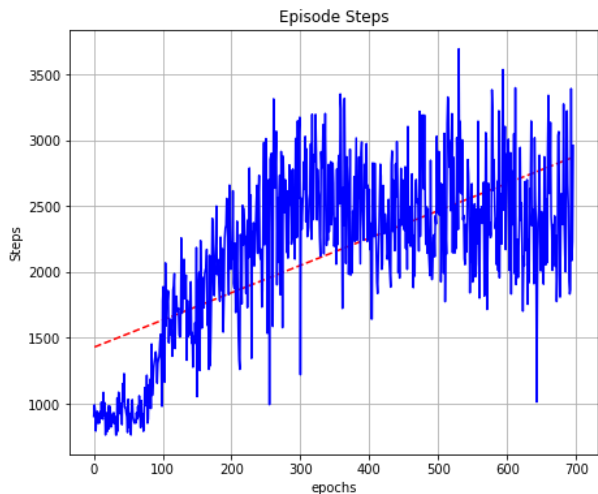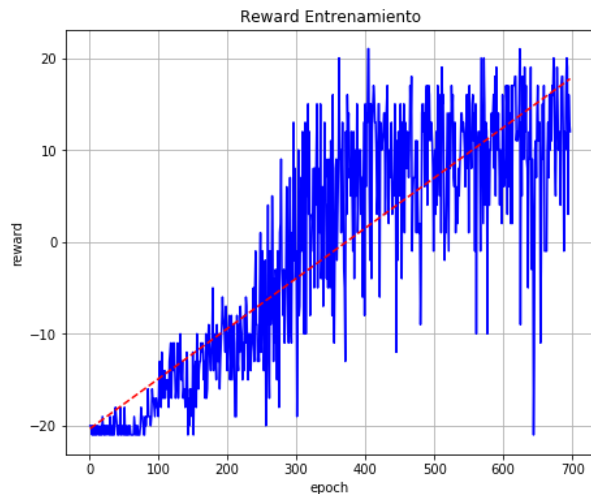
```
1417148/1500000: episode: 663, duration: 16.413s, episode steps: 2720, steps per second: 166, episode reward: -1.000, mean
1420283/1500000: episode: 664, duration: 18.782s, episode steps: 3135, steps per second: 167, episode reward: 10.000, mean
1422704/1500000: episode: 665, duration: 14.862s, episode steps: 2421, steps per second: 163, episode reward: 13.000, mean
1425017/1500000: episode: 666, duration: 13.901s, episode steps: 2313, steps per second: 166, episode reward: 7.000, mean
1427029/1500000: episode: 667, duration: 11.894s, episode steps: 2012, steps per second: 169, episode reward: 16.000, mean
1429389/1500000: episode: 668, duration: 14.221s, episode steps: 2360, steps per second: 166, episode reward: 10.000, mean
1431579/1500000: episode: 669, duration: 13.339s, episode steps: 2190, steps per second: 164, episode reward: 16.000, mean
1434004/1500000: episode: 670, duration: 15.156s, episode steps: 2425, steps per second: 160, episode reward: 11.000, mean
1436047/1500000: episode: 671, duration: 12.563s, episode steps: 2043, steps per second: 163, episode reward: 17.000, mean
1438323/1500000: episode: 672, duration: 13.958s, episode steps: 2276, steps per second: 163, episode reward: 16.000, mean
1440099/1500000: episode: 673, duration: 10.853s, episode steps: 1776, steps per second: 164, episode reward: 20.000, mean
1442079/1500000: episode: 674, duration: 12.407s, episode steps: 1980, steps per second: 160, episode reward: 17.000, mean
1445116/1500000: episode: 675, duration: 18.741s, episode steps: 3037, steps per second: 162, episode reward: 8.000, mean
1448181/1500000: episode: 676, duration: 18.921s, episode steps: 3065, steps per second: 162, episode reward: 5.000, mean
1450684/1500000: episode: 677, duration: 15.406s, episode steps: 2503, steps per second: 162, episode reward: 12.000, mean
1452494/1500000: episode: 678, duration: 11.225s, episode steps: 1810, steps per second: 161, episode reward: 19.000, mean
1454844/1500000: episode: 679, duration: 14.468s, episode steps: 2350, steps per second: 162, episode reward: 15.000, mean
1457438/1500000: episode: 680, duration: 16.038s, episode steps: 2594, steps per second: 162, episode reward: 10.000, mean
1459954/1500000: episode: 681, duration: 15.391s, episode steps: 2516, steps per second: 163, episode reward: 12.000, mean
1462315/1500000: episode: 682, duration: 14.364s, episode steps: 2361, steps per second: 164, episode reward: 11.000, mean
1465589/1500000: episode: 683, duration: 19.669s, episode steps: 3274, steps per second: 166, episode reward: 4.000, mean
1467949/1500000: episode: 684, duration: 14.236s, episode steps: 2360, steps per second: 166, episode reward: 17.000, mean
1470078/1500000: episode: 685, duration: 12.614s, episode steps: 2129, steps per second: 169, episode reward: 18.000, mean
1472079/1500000: episode: 686, duration: 11.922s, episode steps: 2001, steps per second: 168, episode reward: 18.000, mean
1475090/1500000: episode: 687, duration: 18.281s, episode steps: 3011, steps per second: 165, episode reward: 11.000, mean
1478312/1500000: episode: 688, duration: 19.412s, episode steps: 3222, steps per second: 166, episode reward: -1.000, mean
1480984/1500000: episode: 689, duration: 16.088s, episode steps: 2672, steps per second: 166, episode reward: 12.000, mean
1483479/1500000: episode: 690, duration: 15.121s, episode steps: 2495, steps per second: 165, episode reward: 10.000, mean
1485409/1500000: episode: 691, duration: 11.626s, episode steps: 1930, steps per second: 166, episode reward: 17.000, mean
1487242/1500000: episode: 692, duration: 11.174s, episode steps: 1833, steps per second: 164, episode reward: 20.000, mean
1489107/1500000: episode: 693, duration: 11.273s, episode steps: 1865, steps per second: 165, episode reward: 19.000, mean
1492498/1500000: episode: 694, duration: 20.317s, episode steps: 3391, steps per second: 167, episode reward: 3.000, mean
1494585/1500000: episode: 695, duration: 12.632s, episode steps: 2087, steps per second: 165, episode reward: 16.000, mean
1496819/1500000: episode: 696, duration: 13.373s, episode steps: 2234, steps per second: 167, episode reward: 13.000, mean
1499778/1500000: episode: 697, duration: 17.796s, episode steps: 2959, steps per second: 166, episode reward: 12.000, mean
done, took 9042.429 seconds
Pesos guardados en: 202001111248_dqn_PongDeterministic-v0_weights.h5f
```


Reward Entrenamiento — Episode Steps

```
Testing for 10 episodes ...
Episode 1: reward: 20.000, steps: 1703
Episode 2: reward: 18.000, steps: 2125
Episode 3: reward: 14.000, steps: 2599
Episode 4: reward: 18.000, steps: 2191
Episode 5: reward: 20.000, steps: 1988
Episode 6: reward: 20.000, steps: 1862
Episode 7: reward: 11.000, steps: 2703
Episode 8: reward: 20.000, steps: 1818
Episode 9: reward: 17.000, steps: 2181
Episode 10: reward: 19.000, steps: 2008
mean reward: 17.7
mean_steps: 2117.8
(17.7, 2117.8)
```

```
1 #my_hist_reward2=[]
2 #my_hist_steps2=[]
3 type(my_hist_reward2)
4 my_hist_reward=(train_history.history['episode_reward'])
5 my_hist_steps=(train_history.history["nb_episode_steps"])
```