Advanced topics in Deep Reinforcement Learning
Week 10 slides
Comparing EvoMAML, REPTILE and ES-MAML in the LunarLander-v2 environment

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Comparing EvoMAML, REPTILE and ES-MAML in the LunarLander-v2 environment

EvoMAML

optimizes hyperparameters in meta-reinforcement learning by applying evolutionary strategies to perturb and evolve hyperparameter sets over generations based on performance rewards.

ES-MAML

ES-MAML leverages evolutionary strategies to compute gradients for hyperparameter updates, using perturbations and performance-based rewards to guide optimization in meta-reinforcement learning.

Reptile

Reptile simplifies meta-reinforcement learning by repeatedly sampling tasks, performing gradient updates, and moving the initial parameters towards the updated parameters, effectively learning a good initialization.

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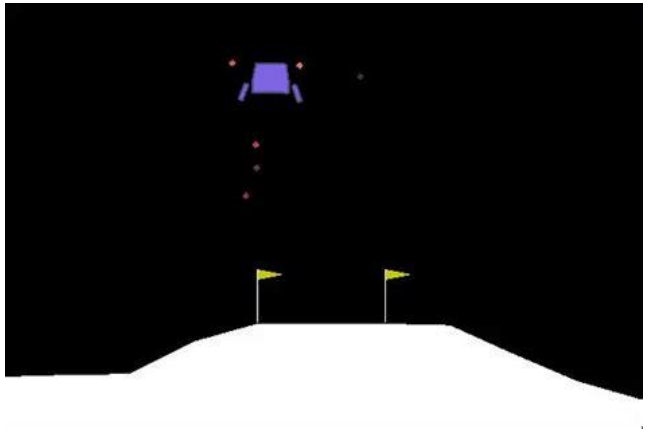

Fig.1: Stable baselines lunar lander-v2

EvoMAML preliminary result
-175.63824800000003
-120.4455406
-135.71329419999998
-110.52858959999999
-80.7996916

ES-MAML preliminary result
-175.63824800000003
3.2476257000000004
-59.981305600000006
24.608173400000005
44.400115099999994

Reptile preliminary result
-882.2719797
-826.1661773
-899.4343997
-1728.1372563
-494.35589730000004

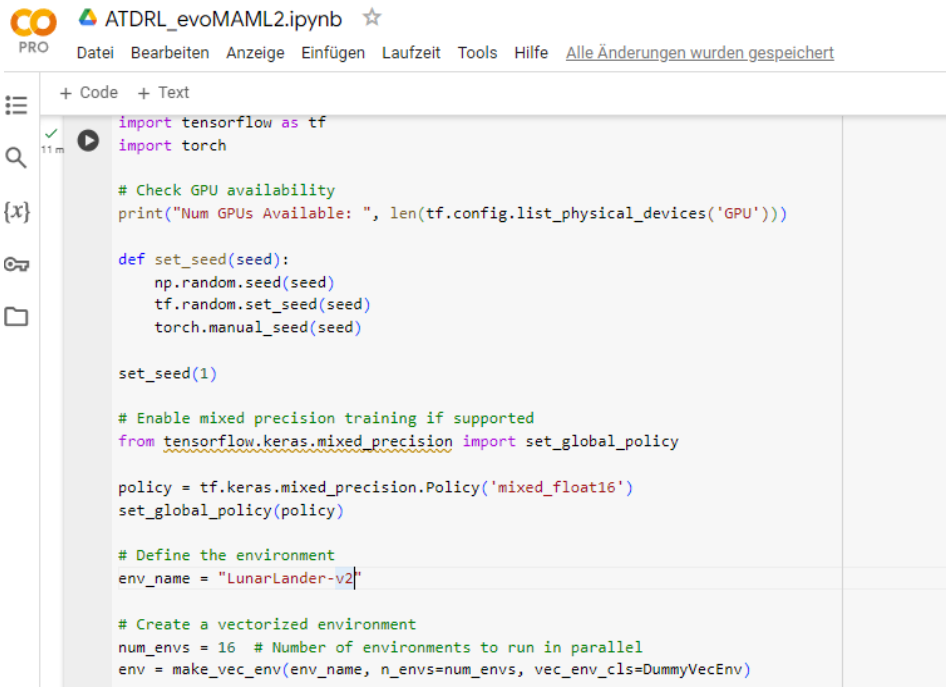

Fig.2: Screenshot of the implementation