



# Hands-on: #1

## Lab Exercise: Comparing A2C, TRPO, PPO, and DDPG

### 1. Run the Baseline Codes

- Use the provided scripts for each algorithm (e.g., ``trpo.py``, ``ppo.py``, and ``ddpg.py``, a2c, ).
- Train on the same continuous-action environment (Pendulum-v1 or LunarLanderContinuous-v2) or differentiating between environments (e.g., ``CartPole-v1`` for TRPO/PPO or ``Pendulum-v1`` for DDPG).
- Note the final average returns or any success metrics.
- Also make runs using StableBaseline3

### 2. Tune Hyperparameters

- For each algorithm, choose one parameter to change (e.g., learning rate, batch size, clipping range, etc.).
- Re-run the training with this modified parameter and observe whether performance improves or worsens.

### 3. Save and Evaluate

- Add code to save the trained model parameters (actor and/or critic) in a file (e.g., ``ppo_policy.pth``).
- Write a small function (or code in ``main``) that loads these parameters and runs several episodes without training, printing or recording the test returns.

### 4. Compare Results

- For each algorithm, record the training curves (or final returns) in a simple text file or CSV.
- Plot or compare these results side by side: Which algorithm converges faster? Which reaches the highest score?
- Provide a brief explanation of any differences you observe.