EVOLTask User Guide

v0.1

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1. System Requirements

1.1. Installation

EVOLTask was developed in Python (v3.5+) and run on the Windows 64-bit operating system. In addition, *EVOLTask* uses several additional modules that are not included with the base Python installation and must be installed separately (e.g., using *pip* or another package installer), listed below, with the specified version (or later) of each module listed in parentheses below:

- matplotlib (3.1.1)
- numpy (1.16.5)
- pandas (0.25.1)
- pybullet (2.5.6, API v20190930)
- scipy (1.3.1)

1.2. EVOLTask Components

EVOLTask contains the following components (Python files) that are used in the simulation:

- basis.py – This contains the implementation for the basis torque model.
- bullet_inter.py – This contains the implementation for interfacing with the *PyBullet* environment and simulating movement. Use this to run a sample DVJ simulation.
- clust.py – This contains the implementation for clustering and discovery of coordination strategies.
- evolve.py – This contains the implementation for the evolutionary algorithm. Use this to run an evolutionary simulation on a sample population.
- humanoid_symmetric.xml – The *Humanoid* model used in the simulation.
- plane.urdf – The file that defines the plane in the environment.
- sample_population.dat – This is a sample population of agents that can be used to systematically compare across simulations. Populations of agents are also generated in 'basis.py'.
- /sample_data – This contains sample torque data that can be used to test the DVJ simulation in 'bullet_inter.py'.