Goal

Simulate an arbitrary initial circumstance and see what happens

Constants

$l_1 = 4$

$l_2 = 2$

$m_1 = 4$

$m_2 = 8$

$g = 9.8$
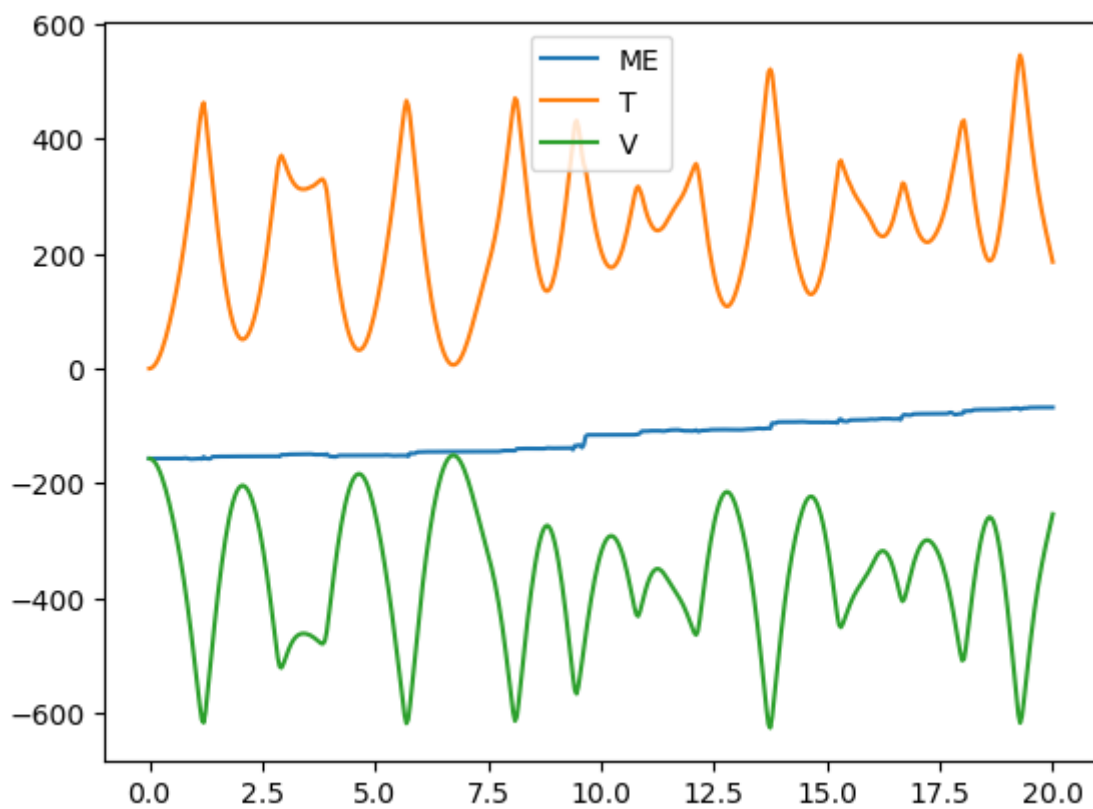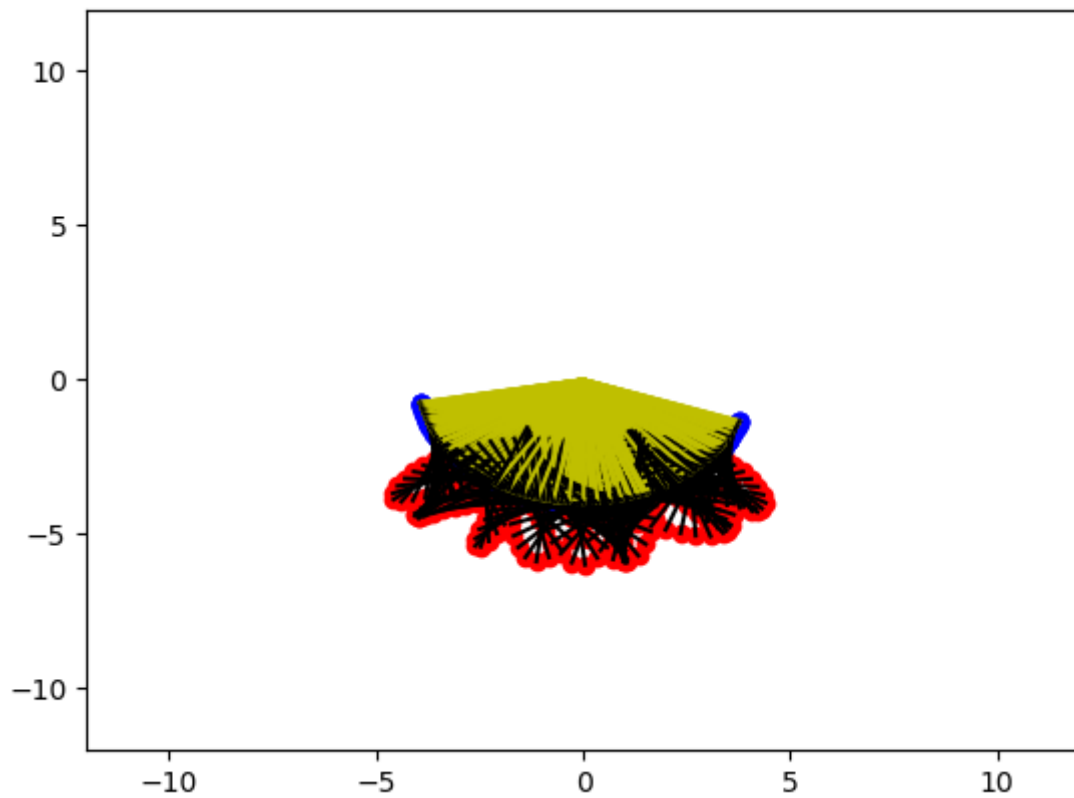
Duration: 20s

Framerate: 25fps

Initial Values

$\theta_1 = -\pi/3$

$\theta_2 = 2\pi/3$

$\dot{\theta}_1 = 0$

$\dot{\theta}_2 = 0$

Results

In which ME stands for mechanical energy, T stands for kinetic energy, V stands for potential energy

The theoretical mechanic energy is -156.8000000000001 J

The average calculated mechanical energy is -119.77303117971792 J

The Root Mean Square Error of mechanical energy is 47.84341654613454

the standard deviation of mechanical energy is 0.10058045206497976

Therefore the calculated energy stays close to the theoretical energy, meaning the energy of this system converges to the theoretical value. Facing this complex situation, the error seems to add up. This simulation has a fair accuracy and a high preciseness.