Robotics II

Day 10: Control Systems I

1. Linearization and Laplace transform the Equation of Motion for an inverted pendulum.

Equation of motion for an inverted pendulum

Linearization

Laplace transforming

1. Derive the transfer function of the inverted pendulum.
2. Stability Analysis.

Characteristic Equation,

The characteristic equation has positive real roots, hence it is unstable.

Hurwitz stability criterion

Since all the determinants are non-positive, the system is unstable.