State Space Equation (Solutions)

by

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State variables are a set of variables that can fully describe the system and by fully describe it means they can give us enough information to predict the future behavior of our system. The state variables represent values from inside the system, that can change over time. In an electric circuit, for instance, the node voltages or the mesh currents can be state variables. In a mechanical system, the forces applied by springs and gravity can be state variables. We denote the input variables with u, the output variables with y, and the state variables with x.
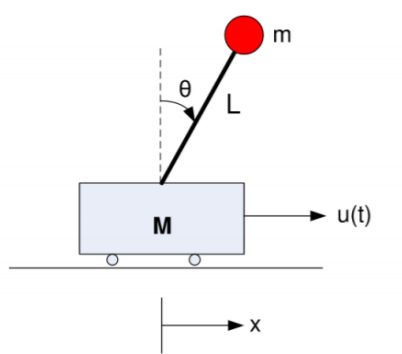
1 Inverted Cart Pendulum

Figure 1: Inverted Cart Pendulum