Adaptive Control of A Spring-Mass Hopper

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• A novel adaptive algorithm to achieve accurate gait control and system identification for running with a planar hopper (SLIP) model.

• Model-based estimation of leg spring and damping constants can either be used to eliminate tracking errors or to achieve accurate system identification.

• Comparison with a non-adaptive approach shows substantial improvements in both tracking accuracy and parameter estimation performance.
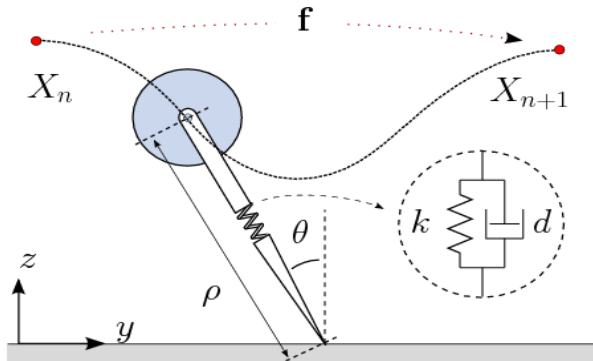
Spring-Loaded Inverted Pendulum (SLIP) model
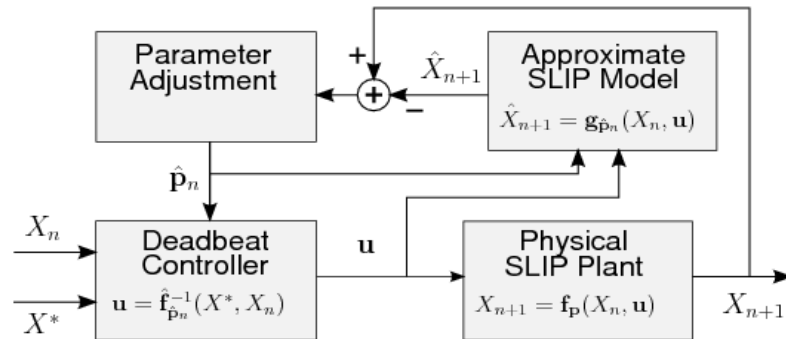
Proposed Adaptive Gait Controller