

Fig. 1. Three mass inverted pendulum model

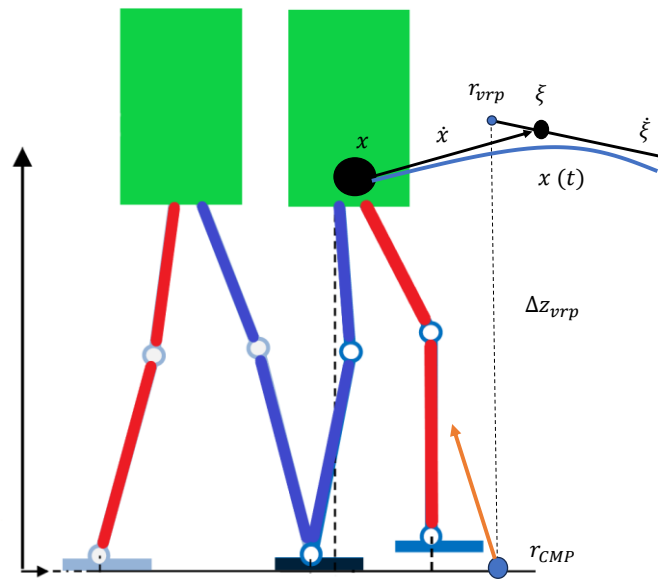


Fig. 2. Schematic diagram of humanoid robot

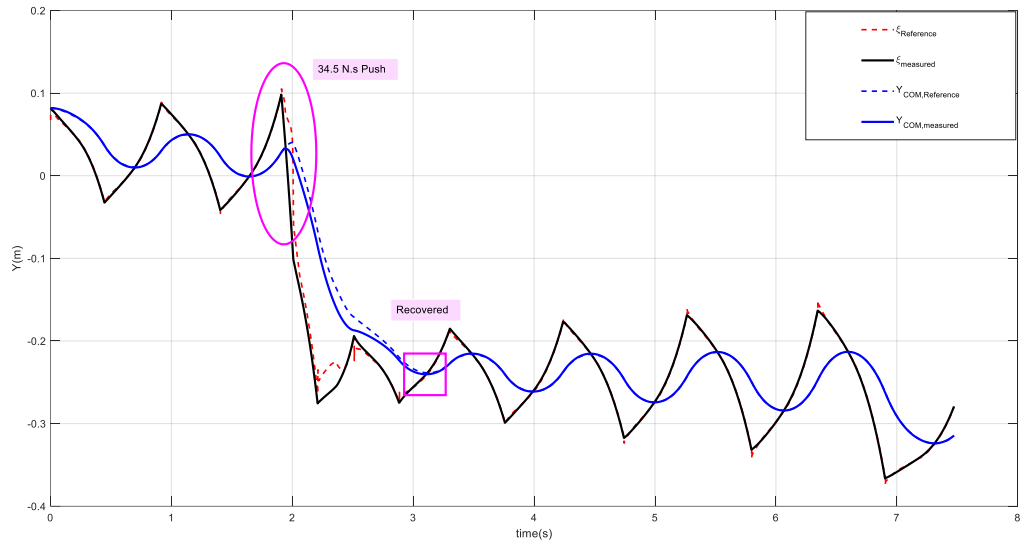


Fig 13. Real-time push recovery of the three-mass linear inverted pendulum model with 0.8 m/s walking speed for 14 steps and 34.5 N.s disturbance.

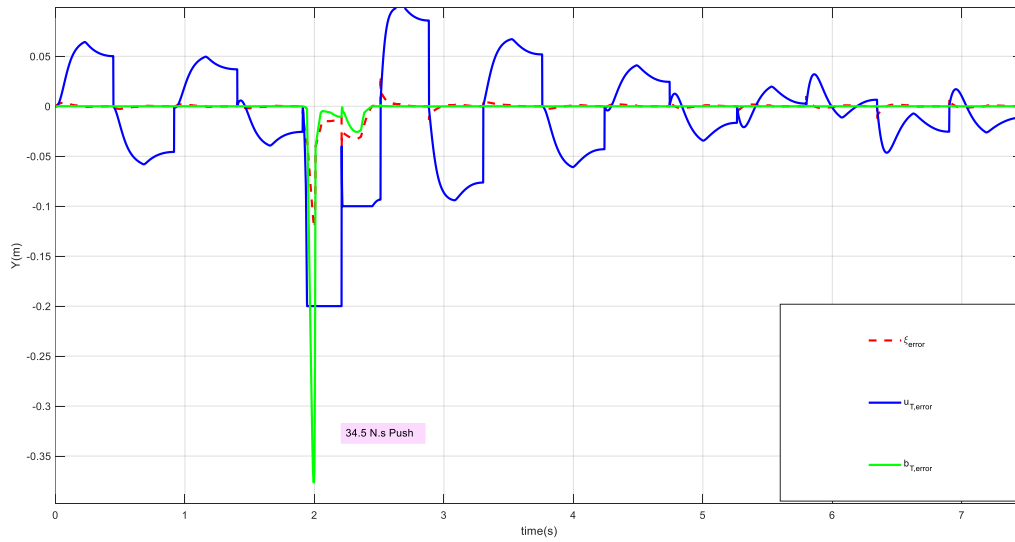


Fig 14. Push recovery error variables.

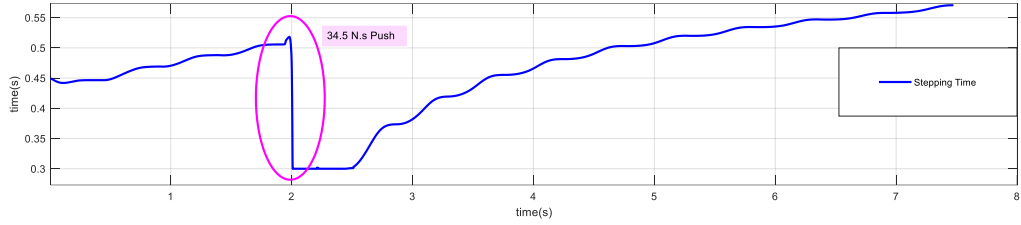


Fig 15. Stepping time for walking speed 0.8 m/s and 14 steps.

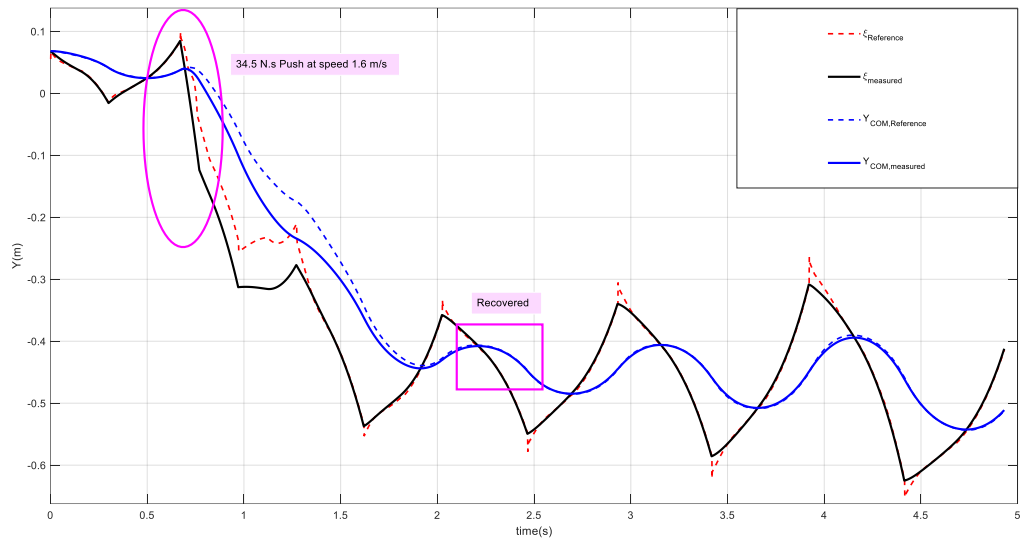


Fig 16. Real-time push recovery of the three-mass linear inverted pendulum model with 1.6 m/s running speed for ten steps and 34.5 N.s disturbance.