

MuJoCo: Projectile Launch Optimization (I)



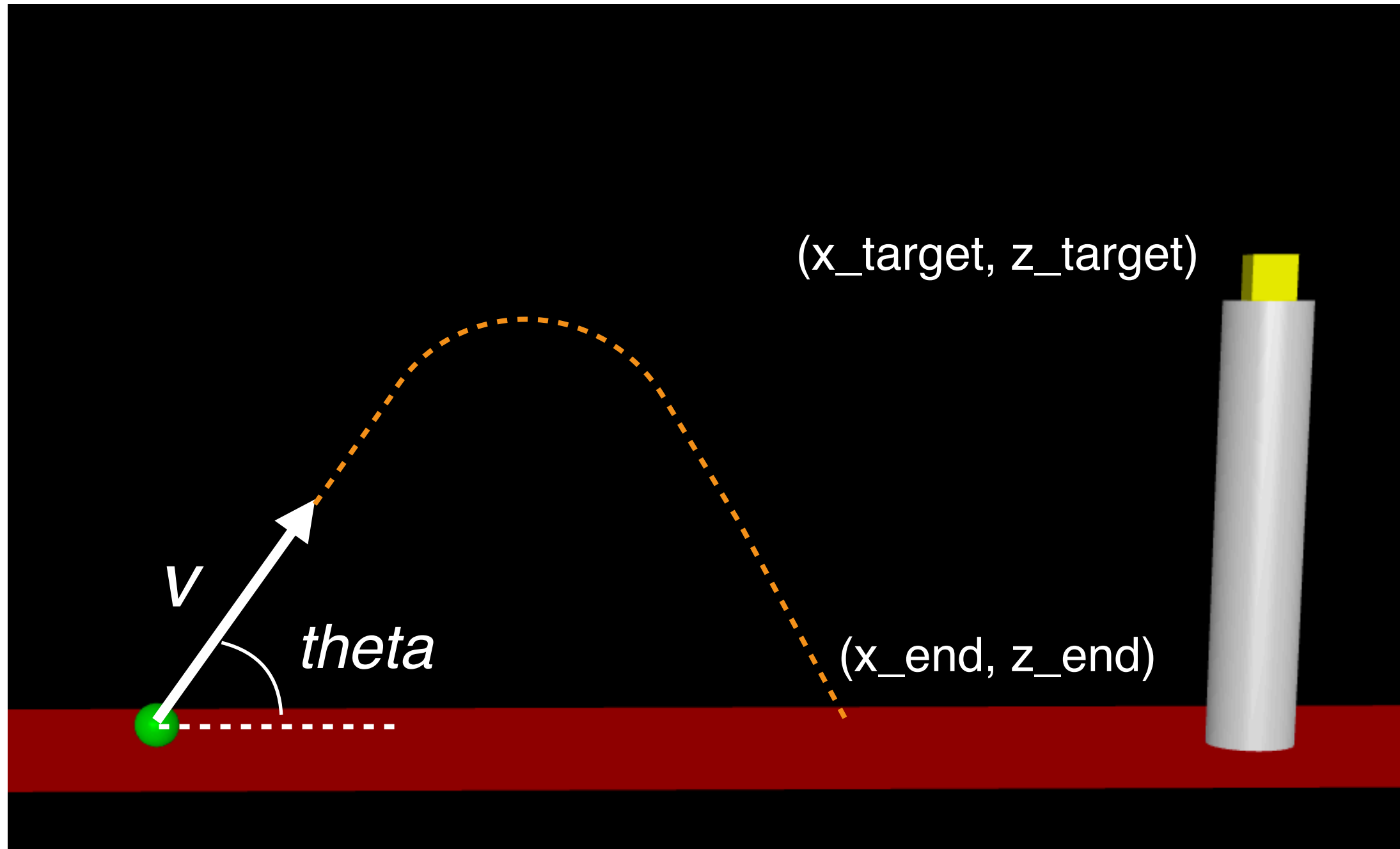
MuJoCo: Projectile Launch Optimization (2)*

Using [template_projectile.zip](#) to get started

1. From tiny.cc/mujoco download [template_projectile.zip](#) and unzip in myproject
2. Rename folder [template_projectile](#) to [projectile_opt](#)
3. Make these three changes
 1. main.c — line 28, change [template_projectile/](#) to [projectile_opt/](#)
 2. makefile — change `ROOT = template_writeData` to `ROOT = projectile_opt` also UNCOMMENT (del #) appropriate to your OS
 3. run_unix / run_win.bat change `<template_projectile>` to `<projectile_opt>`
4. In the shell, navigate to [projectile_opt](#) and type `./run_unix (unix)`

* I don't have instructions for Windows. For Windows, use Ubuntu via Virtualbox.

MuJoCo: Non-linear root finding(I)



Inputs: v , θ , time of flight

Outputs: x_{end} , y_{end}

MuJoCo: Nonlinear root-finding (2)

$$\min_x f(x) = 0$$

Cost needs to be defined
so we set it to 0

subject to:

$$0.1 \leq v \leq \infty$$

$$0.1 \leq \theta \leq \pi/2$$

$$0.1 \leq t \leq \infty$$

$$x_{end} - x_{target} = 0$$

$$z_{end} - z_{target} = 0$$

MuJoCo: Nonlinear optimization (3)

$$\min_x f(x) = t$$

Minimize time

subject to:

$$0.1 \leq v \leq \infty$$

$$0.1 \leq \theta \leq \pi/2$$

$$0.1 \leq t \leq \infty$$

$$x_{end} - x_{target} = 0$$

$$z_{end} - z_{target} = 0$$