

# A Sample Set of Slides

AJ Friend, Nick Henderson  
(w/ material from Stephen Boyd and Steven Diamond)

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# Mathematical optimization

# Outline

## Mathematical optimization

In the morning

In the evening

(mathy math)

optimization problem has form

$$\begin{array}{ll}\text{minimize} & f_0(x) \\ \text{subject to} & f_i(x) \leq 0, \quad i = 1, \dots, m\end{array}$$

- ▶  $x \in \mathbf{R}^n$  is **decision variable** (to be found)
- ▶  $f_0$  is objective function;  $f_i$  are constraint functions
- ▶ problem data are hid inside  $f_0, \dots, f_m$
- ▶ variations: add equality constraints, maximize a utility function, satisfaction (feasibility), optimal trade off

In the morning

# Outline

Mathematical optimization

In the morning

In the evening

In the morning

## Getting up

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one	two	three
apple	beta	omega

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- ▶ Turn off alarm
- ▶ Get out of bed

## code example

```
import numpy as np
y = np.random.rand(5)
print('hello', y)
```



# Breakfast

we need a way to represent math  $x^{\pi^2}$

- ▶ Eat eggs
- ▶ Drink coffee

In the evening

# Outline

Mathematical optimization

In the morning

In the evening

In the evening

## Dinner

- ▶ Eat spaghetti
- ▶ Drink wine

In the evening

## Going to sleep

- ▶ Get in bed
- ▶ Count sheep