Welcome to "Practical Optimization Tools and Techniques"

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This course (and myself)

About the course:

- This is a course on **practical** optimization.
- The focus is on learning optimization that is directly applicable.
- Theory will only be used when it helps you solve a problem.
- The aim is that you are able to start tackling optimization problems when we are done here.
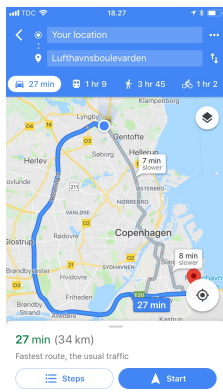
About myself:

- Senior Project Lead in Numerical Competence Center at Ørsted
- PhD in process optimization from Imperial College
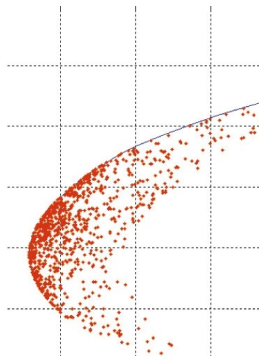- Married, one son

Optimization 101

What is optimization?

In optimization, we are tasked with **choosing** the **best possible** values for the degrees of freedoms in our system.
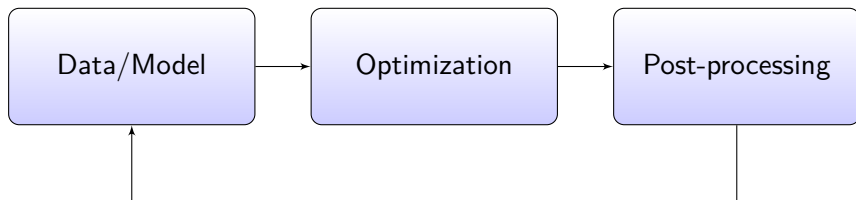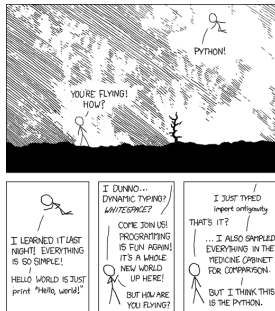
Navigation

Portfolio optimization

Where does optimization fit?


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┌─────────────┐     ┌─────────────┐     ┌──────────────────┐
│ Data/Model  │ ──→ │ Optimization│ ──→ │ Post-processing  │
└─────────────┘     └─────────────┘     └──────────────────┘
       ↑                                          │
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- Typically, optimization is one stage of many in analyzing and solving problems.
- As a developer/data scientist, you will have to work with all three of these boxes regularly.
- In this course we will be focusing the "Model" and "Optimization" parts.

Python 101

- Python is an interpreted, light-weight object-oriented language that has been taking the (scientific) world by storm.
- It is awesome because: (a) it's easy (b) it's free and (c) there are a ton of packages available.
- Since we will be using Python only in this course, let's do a 5 minute crash-course on Python.