**Index Replication**

Non-negative least squares

<https://mouse-connectivity-models.readthedocs.io/en/latest/modules/nonnegative_linear.html>

<https://en.wikipedia.org/wiki/Least_squares>

**Experiencing Tool**

# Types of Risk

### Schwankungsbreite (Volatility)

Animated plot where one follows the daily returns of a single company, then use can successively add more stocks which reduces bandwith of the variation (keep initial series in grey). Beside, show a bar which shows the realized vola. Next, create same graph where portfolio is not equally weighted but optimized (min-var).

### Verluste (Drawdowns)

…

### Abweichung vom Marktindex (Tracking Error)

…

### Modellrisiko (Fehlerhafte Prognosen)

…

### Leverage

…

# Performance Characteristics

### Risk factors (à la Fama-French)

### Performance attribution

Animated charts in R

2d-density with ggplot

<https://www.youtube.com/watch?v=2zBpq6f5sJ8>