## Applied Project Finance

### Requirements

* Implementation of trading strategies
  + Economically senseful
  + Use the programming language R
* Use machine-learning techniques
  + Statistical analysis
  + Use as much indicators as possible
  + **Lasso**, Ridge Regression
* Perform backtests
  + Implement simple models and use them as a benchmark
  + Evaluate the performance of the implemented strategy
* Write a project report (10-15 pages)
* Present your work in a 20 minutes presentation
  + Prepare for questions about:
    - Statistical terms (P-value, Hypothesis Testing, …)
    - Regression
    - Overfitting
    - ML-techniques basics

### Project Procedure

* Understand the basics on the slides
  + Explain the techniques used for data analysis
  + Explain the code example
  + Explain the figures produced by the code snippets
* Apply the basics on crypto price data
  + Translate the techniques to one price data set
  + Backtest the model by a cumulative gain analysis
  + Interpret the results
* Implement a simple model and use it as a benchmark
  + Compare the results
* Find economically senseful approaches to extend the basic model
  + Implement 3-4 extensions
  + Explain the main idea behind the extended strategies
  + Benchmark testing of all extensions
* Optional: Include transaction data to one extension
  + ML algorithm
  + Comparison to benchmarks
* Write an documentation of the work
  + Introduction
  + Basic model and statistical analysis
    - Approach
    - Implementation
    - Results
    - Interpretation
  + Extensions
    - Approaches
    - Implementation
    - Results
    - Interpretation
  + Use of transaction data
    - Approaches
    - Implementation
    - Results
    - Interpretation
  + Conclusion
* Prepare a presentation

### Timeline