

University of Padova
Seminar series on Algorithmic Trading
Prof. Aistis Raudys (University of Vilnius)

Outline: This tutorial on algorithmic trading provides an in-depth look at the fundamental concepts, strategies, and techniques involved in automated financial trading. The tutorial explores both classical and modern approaches, comparing human-driven decision-making with computer-driven processes in trading. It focuses on various algorithmic strategies such as trend following, mean reversion, arbitrage (including statistical and index arbitrage), high-frequency trading (HFT), and event-driven trading.

Key topics include:

1. Algorithmic Trading Methods:

- Technical strategies (e.g., trend following, seasonality).
- Arbitrage opportunities (e.g., triangular and index arbitrage).
- High-frequency trading (HFT) and its limitations in today's markets.

2. Automation Advantages and Disadvantages:

- **Pros:** Speed, replication, emotionless decision-making, backtesting capabilities.
- **Cons:** Lack of adaptability to unforeseen market changes, limited ability to see the "big picture."

3. Quantitative Finance Techniques:

- The role of quants and their application of mathematics, machine learning, and finance to model and optimize trading strategies.
- Statistical arbitrage and pairs trading, relying on historical data to find mean-reverting behaviors.

4. Optimizations:

- Techniques for optimizing trading systems through backtesting and parameter tuning (e.g., moving averages).

This presentation highlights the evolution of financial trading from manual to automated systems, emphasizing the critical role that speed, data analysis, and programming play in today's financial markets. It also covers potential pitfalls of algorithmic trading, such as the inability to react to market anomalies or crashes, as illustrated by the 2010 "Flash Crash."

Schedule:

- Tuesday 15 October 2024, 16.30 - 18.30, room LUF1 (via Luzzati)
- Thursday 17 October 2024, 14.30 - 16.30, room 2AB40 (Torre Archimede)
- Friday 18 October 2024, 14.30 - 16.30, room 1BC50 (Torre Archimede)