

# FNCE30010 Algorithmic Trading

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## What Is This Class About?

The class introduces students to necessary foundations in order to design and deploy algorithmic traders in real financial markets. It combines teaching of game theory, market microstructure theory and practice, algorithmic design and computer programming, and statistical analysis and backward testing.

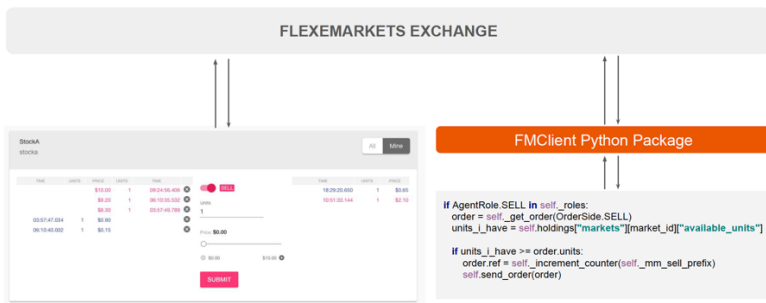


It is a hands-on class, where 2/3 of the time is spent on application. The main (computer) language of instruction is Python.

## What Is Unique?

The class teaches algorithmic trading exactly the way a robotics class is taught. While attention is paid to traditional approaches to constructing algorithms such as Almgren-Chriss or history-based robot development (we use Quantopian), most of the effort is devoted to developing robots to be deployed in our own, controlled online markets, tasked with attaining increasingly complex goals.

Flex-E-Markets, a SaaS software package for rapid deployment of multiple, electronic, anonymous, continuous open-book markets, provided the main trading interface, for both manual and robot trading. FMClient, a python package developed at the University of Melbourne, provided the essential components to facilitate robot design and communication with the marketplaces. Together, Flex-E-Markets and FMClient provided the robot laboratory that engineers are used to in the context of traditional robots.



## Why This Approach?

Compared to traditional approaches (which amount to training robots on historical data from field markets), our approach:

1. Teaches goal-oriented algorithm design
2. Forces students to think modularity
3. Highlights strategic issues in trading
4. Provides students hands-on experience with their robots in a realistic, even if controlled environment.

That is, we teach algorithmic trading the way robotics should be taught.

## Who Teaches?

- Dr. Nitin Yadav, who has a PhD in Computer Science and a Master's degree in finance.
- Prof. Peter Bossaerts, who has pioneered experiments with financial markets (among others).

Note: Prof. Bossaerts taught 23 years at Caltech, where he was exposed to algorithm trading early on, in the mid 90s, when Hull Trading and Susquehanna started hiring his students in order to develop the first automated market makers in the world. There, Prof. Bossaerts developed Flex-E-Markets, a patented online market development software. He has used this software (and precursors) during 20 years of research and teaching on financial markets, mostly at Caltech, EPFL and now at the University of Melbourne. Dr. Nitin Yadav enabled algorithmic trading by developing the robot client package for Flex-E-Markets.