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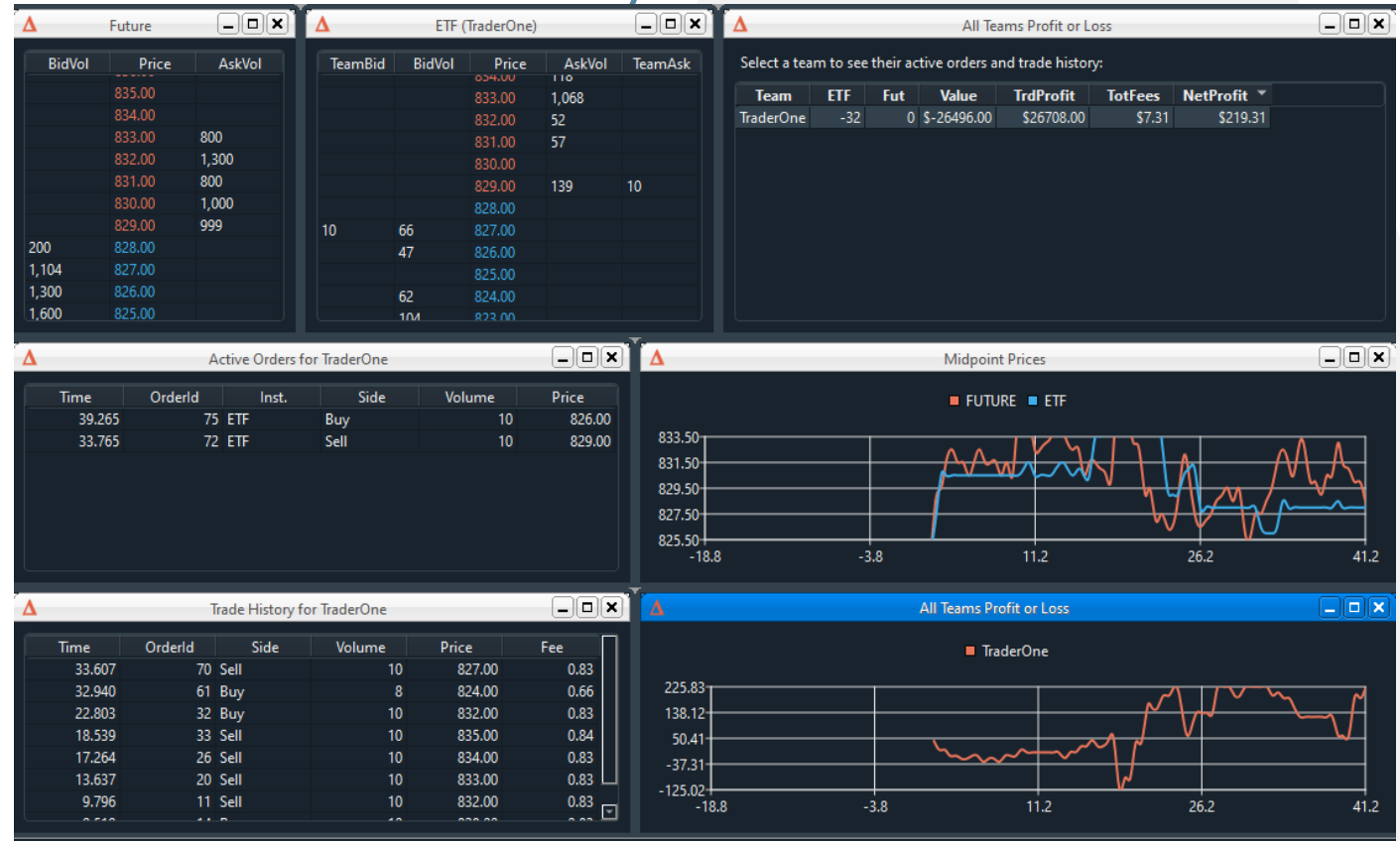
MELBOURNE HACK 2022

**BUILDING A TRADING BOT
WITH OPTIVER**



AGENDA

- Trading Basics
 - The Pillars of HFT
 - What is Market Making?
 - What is a Theo? How can we calculate one?
 - Risk Basics
 - Execution Basics
- Making a Basic Autotrader
 - Explaining the UI (Future vs ETF, Profits)
 - Building a trader using what we just learnt
 - Further reading to make a better auto-trader



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THE BASICS

PILLARS OF TRADING

THE HEART OF OPTIVER'S BUSINESS

- **Pricing**
- Execution
- Risk
- **Market Making**

We will focus on these today



A diagram consisting of two thin blue lines that originate from a single point on the right and branch out to the left. One line points directly to the word 'Pricing' in the list, and the other line points directly to the words 'Market Making' in the list.

PILLARS OF TRADING

THE HEART OF OPTIVER'S BUSINESS

- **Pricing**
- Execution
- Risk
- **Market Making**

These are just as important, but we will only cover them briefly

MARKET MAKING – THE BASICS

PRETEND YOU WISH TO SELL A HOUSE...

- Selling a house is painful
 - You need to find buyers
 - You need to negotiate with them all on a fair price
 - You close the deal months after listing
 - Houses, are **illiquid** (majority of cases)



The background features a white central area flanked by light gray diagonal bands. A dark teal line descends from the top left, crossing a light blue line that ascends from the bottom left. On the right side, a light blue line ascends from the bottom, forms a horizontal plateau, and then descends slightly, while a red line continues the upward ascent from below the plateau.

The key to any auto-trader...

THEO

The fair price **we** think the
instrument should trade at

HOW DO WE FIND THIS MYSTERIOUS THEO?

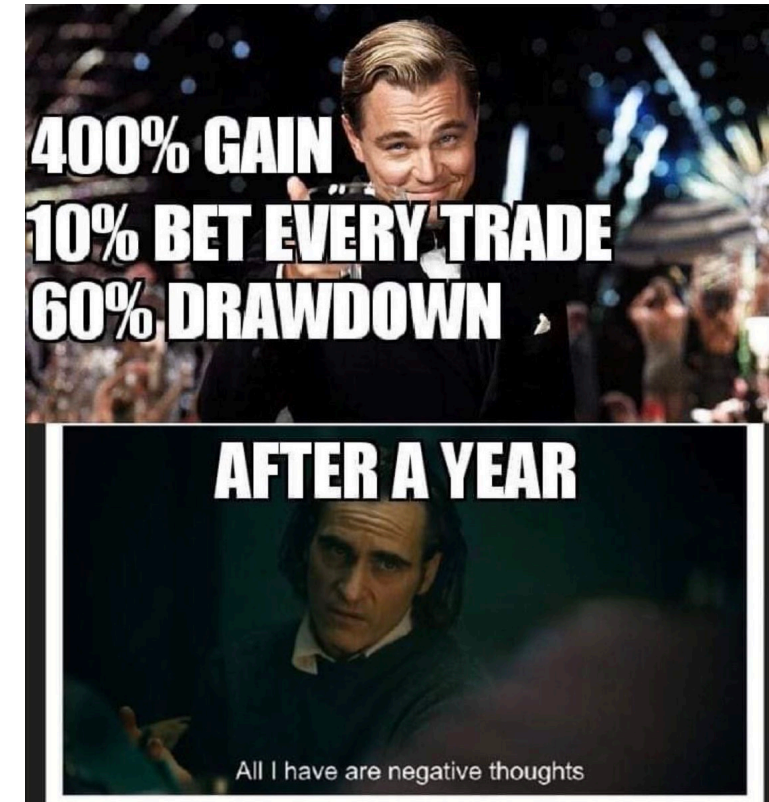
- Posted by u/zsd99 2 years ago 🏠 3 📺 6 📺 7 🐼 2
- 9.2k Everything is priced in.

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QUICK LOOK AT: RISK

WHY CARE ABOUT RISK?

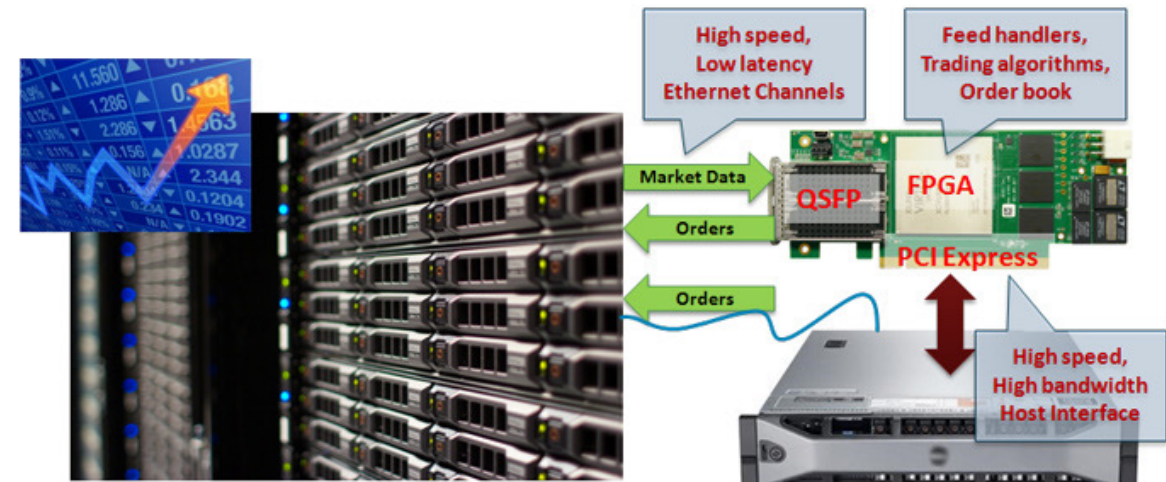
- Exchanges like most things in life have rules
 - You can't just rock up and manipulate the price to what you want
 - Exchanges have the right to ban you if you do anything considered unfair
 - It's important to make your trading strategy compliant
- You also got to be careful with your money
 - Losing money isn't fun
 - Decide on a risk appetite, and work off that
 - **Hedge** out risks you don't want to take (hedging is like insurance for your position)



QUICK LOOK AT: EXECUTION

IT'S A GAME OF SPEED

- There are a lot of other participants all trying to get rich just like you
 - Opportunities are plentiful, but its first come first serve
 - You need to be fast, or you miss out
 - In the real market, Python won't cut it, since it's too slow
 - Optiver, and many other HFT firms use **FPGAs** to perform trades at breakneck speeds.
 - On some of Optiver's servers, trade decisions happen in nanoseconds. The limiting factor is the speed of light across the board.



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**LET'S GET
CODING!**

THANK YOU

GOOD LUCK AT MELBOURNE HACK!

- If you apply to work at Optiver because of this workshop, don't forget to put HackMelbourne and me as your source.
- It helps Optiver recognise these workshops provide value!
- I'll be around to answer any questions doing the hackathon ☺
- **Go grab your free Optiver shirt from the front!**
- Apply for internships and grad roles this year:
- <https://www.optiver.com/working-at-optiver/career-opportunities>

CONNECT WITH ME!

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THANK YOU