TREASURY RESEARCH

A decentralized quant trading platform

PUT YOUR QUANT STRATEGY ON BLOCKCHAIN TO GET CLOSER TO DATA AND TRADING DESK

On-chain DATA

As blockchain activity booming, variety of on-chain data generate significant alpha opportunity for professional traders to exploit.

→ Put your strategy on blockchain to get instant access to on-chain data.

Decentralized TRADING DESK

There is a fasting-growing number of on-chain trading portals, such as DEXs, aggregators and derivatives, etc. Always

→ Put your strategy on blockchain to get connected with variety of on-chain trading portals.

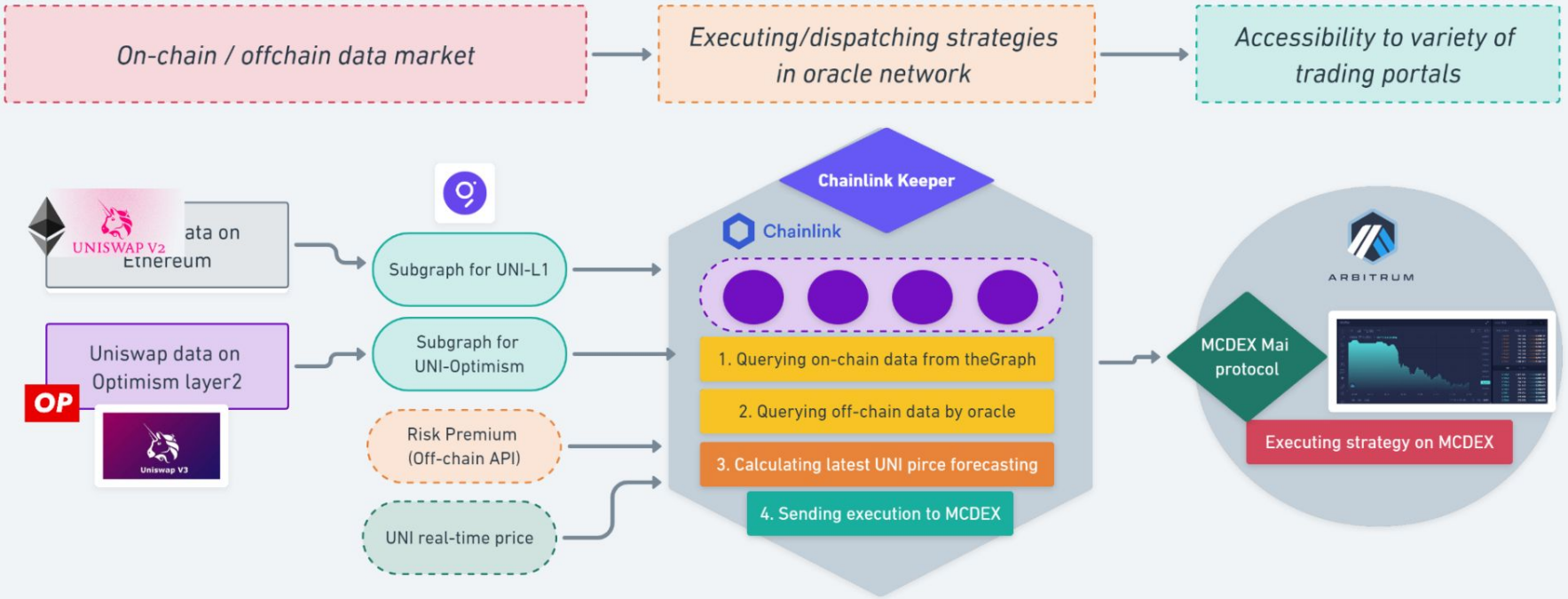
WHAT STOP DE-QUANTS TO PUT THEIR STRATEGIES ON DEFIS TRADING?

- ***Hard to access & index on-chain signals (on multi-chains) seamlessly.***
  - *Indexing & querying*
  - *Multi-chains aggregation*

- ***hard to implement & execute trading strategies in a trustworthy manner.***
  - Trusted execution environment
  - Accessibility to trading portals on multi-chains

- ***Lacking of mechanism to allow de-quants to monetize their strategies.***
  - Not development-friendly for algorithm engineers.
  - Always great to reward best strategies higher fund leverage !

SOLUTION
TREASURY RESEARCH DE-QUANT PLATFORM

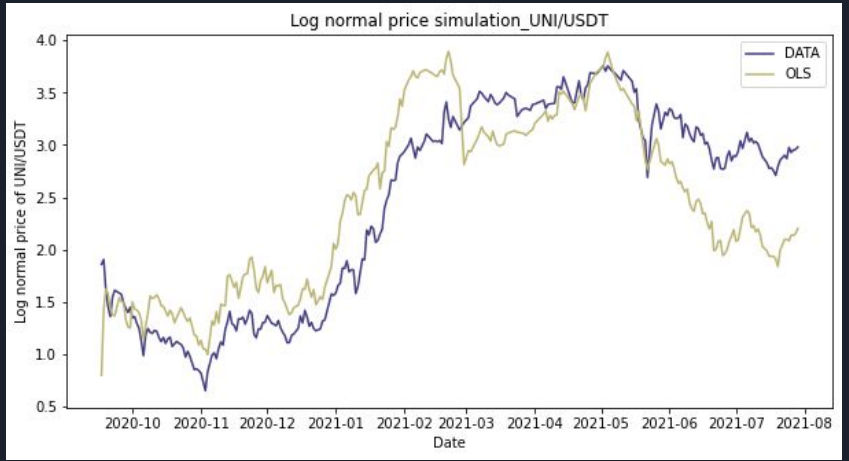


HACKATHON IMPLEMENTATION
HOW TO BUILD A SIMPLE LINEAR REGRESSION ALGO. ON TR DE-QUANT

What is the correlation between

UNI's TVL, daily MV trading Vol.

→ UNI's price?



HACKATHON IMPLEMENTATION

I. MODELING & BACKTEST

Simulation results is not that good, but **let's implement this strategy in TR de-Quant platform anyway.**

OLS Regression Results

Dep. Variable:	price_log	R-squared:	0.801
Model:	OLS	Adj. R-squared:	0.786
Method:	Least Squares	F-statistic:	54.35
Date:	Sat, 31 Jul 2021	Prob (F-statistic):	3.42e-10
Time:	04:33:13	Log-Likelihood:	51.658
No. Observations:	30	AIC:	-97.32
Df Residuals:	27	BIC:	-93.11
Df Model:	2		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
Intercept	-13.8673	1.618	-8.572	0.000	-17.187	-10.548
logLiquidity	0.9699	0.097	10.045	0.000	0.772	1.168
logusd_volume	-0.0154	0.018	-0.848	0.404	-0.053	0.022

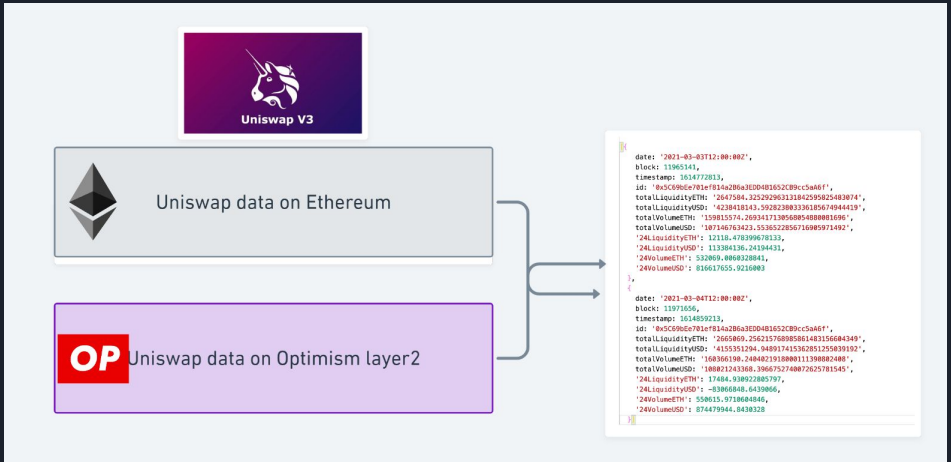
Omnibus:	0.425	Durbin-Watson:	2.199
Prob(Omnibus):	0.809	Jarque-Bera (JB):	0.563
Skew:	-0.217	Prob(JB):	0.755
Kurtosis:	2.488	Cond. No.	4.69e+03

$$log(P1) = -13.8673 + 0.9699 * log(TVL) - 0.0154 * log(MV\ trading\ volume)$$

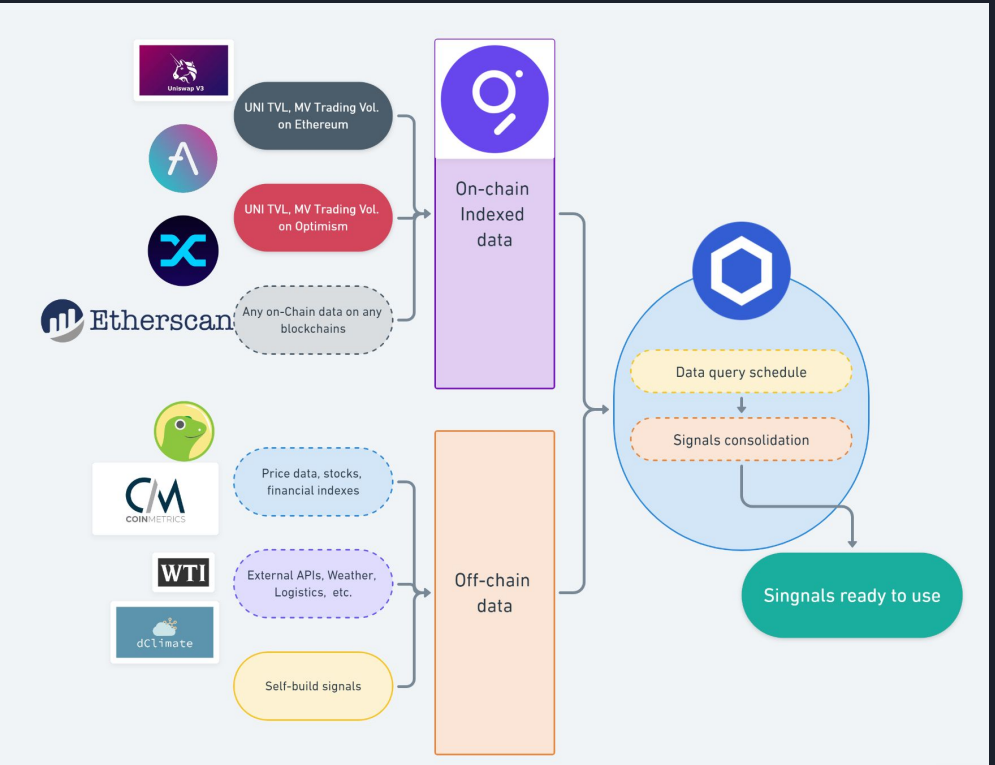
HACKATHON IMPLEMENTATION

II. SIGNALS COLLECTING AND CONSOLIDATION

- Querying UNI's real-time indexed TVL and MV trading vol. from both Ethereum L1 & Optimism.
- Consolidating them into global values.



TR DE-QUANT PLATFORM
A DECENTRALIZED FINANCIAL DATA MARKET



With empowering of theGraph and Chainlink, we can build a decentralized financial data market

→ de-quants can use it to cook their own on-chain strategies.

HACKATHON IMPLEMENTATION

III. STRATEGY IMPLEMENTATION

$$log(P1) = -13.8673 + 0.9699 * log(TVL) - 0.0154 * log(MV\ trading\ volume)$$

/contract/theGraphDataEA.sol

Chainlink

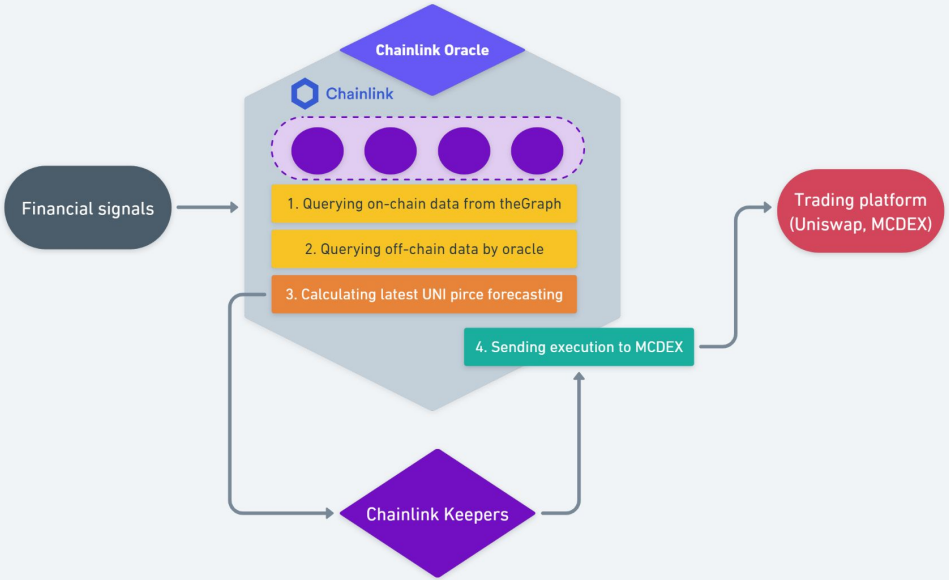
```
/**
 * calculate
 * log(beta_0)+beta_1*log(TVL)+beta_2*log(MV trading volume)
 *
 * @params totalLiquidityUSD
 * @totalVolumeUSD totalVolumeUSD
 *
 * https://woolen-twill-715.notion.site/modeling-9a6ee46e2c40456ea944b2d6afdbe9cb
 */
const calculate = ({ totalLiquidityUSD, totalVolumeUSD }) => {

  // -13.8673+0.9699*log(TVL)-0.0154*log(MV trading volume)
  // -13.8673+0.9699*log(TVL)-0.0154*log(MV trading volume)
  const beta_0 = -13.8673;      You, seconds ago • Uncommitted changes
  const beta_1 = 0.9699;
  const beta_2 = 0.0154;

  // log(beta_0)+beta_1*log(TVL)+beta_2*log(MV trading volume)

  const result = log(beta_0) + beta_1 * log(totalLiquidityUSD, 10) + beta_2 * log(totalVolumeUSD, 10)
  return result
}
```

TR DE-QUANT PLATFORM
A OFF-CHAIN COMPUTATION ENVIRONMENT



With empowering of Chainlink off-chain computation and task scheduler

→ de-quants can implement their strategy into oracle to master its data flow and execution.

HACKATHON IMPLEMENTATION

IV. EXECUTION FULFILLMENT

/contract/theGraphDataEA.sol

```
function fulfillEthereumData(bytes32 _requestId, bytes32 _data)
    public
    recordChainlinkFulfillment(_requestId)
{
    data = _data;

    /**
     *  Call  mcdex trade contract
     *  0  1  2
     *  1 tradeBuy  2 tradeSell
     */
    if(_data  === stringToBytes32("1")){
        IMcdexTrade(address(0xcdd440d33D8A1Cb2c53846A6b77586F87e9b4812)).tradeBuy();
    }
    if(_data  === stringToBytes32("2")){
        IMcdexTrade(address(0xcdd440d33D8A1Cb2c53846A6b77586F87e9b4812)).tradeSell();
    }
}
```

/contract/mcdex-mai/mcdex..sol

```
/**
 *  tradeBuy
 * 如果你是合约调用并且抵押物在合约中，trader应该是你的合约地址
 * 合约调用时block.timestamp不可能改变，所以deadline用block.timestamp
 * referrer是返点地址，可以是0，也可以是你们团队
 * flag用0
 * flag为0时，要先调用deposit函数
 * index 0. amount是抵押物
 *
 * 做多amount为正数，做空为负数
 */
function tradeBuy() public {
    IPerpetual(address(0xc32a2dFe97E2bABc90a2b5e6aef41e789ef2E13)).trade(0,address(this),1* 10**18,30* 10**18,block.timestamp,address(0),0);
}


/**
 *  tradeSell
 * 如果你是合约调用并且抵押物在合约中，trader应该是合约地址
 * 合约调用时block.timestamp不可能改变，所以deadline用block.timestamp
 * referrer是返点地址，可以是0，也可以是团队地址
 * flag用0
 * flag为0时，要先调用deposit函数
 * index 0. amount是抵押物
 *
 * 做多amount为正数，做空为负数
 */
function tradeSell() public {
    IPerpetual(address(0xc32a2dFe97E2bABc90a2b5e6aef41e789ef2E13)).trade(0,address(this),1* 10**18,-30* 10**18,block.timestamp,address(0),0);
}
}
```

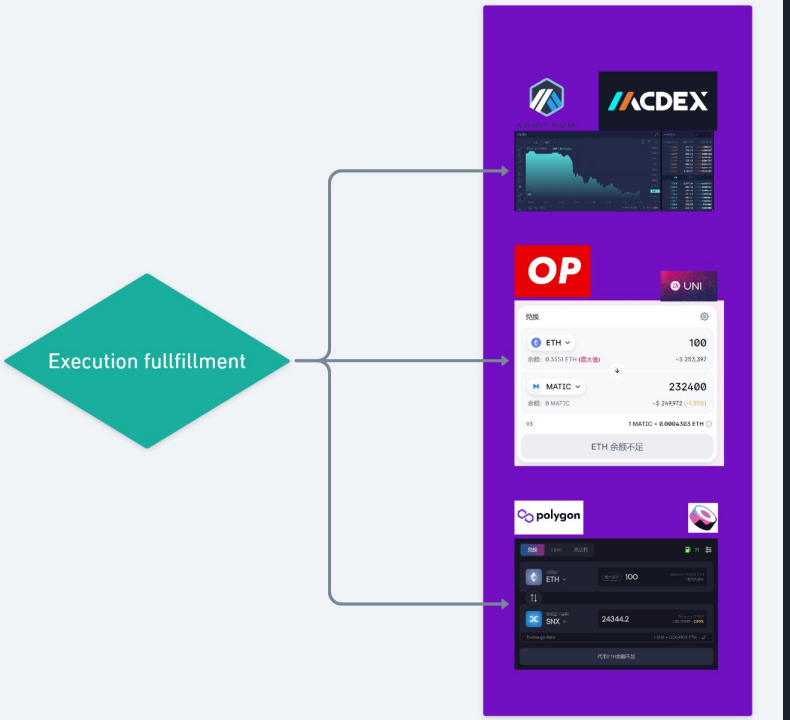
IF predict price > current price

→ Buy in / keep buy position

ELSE

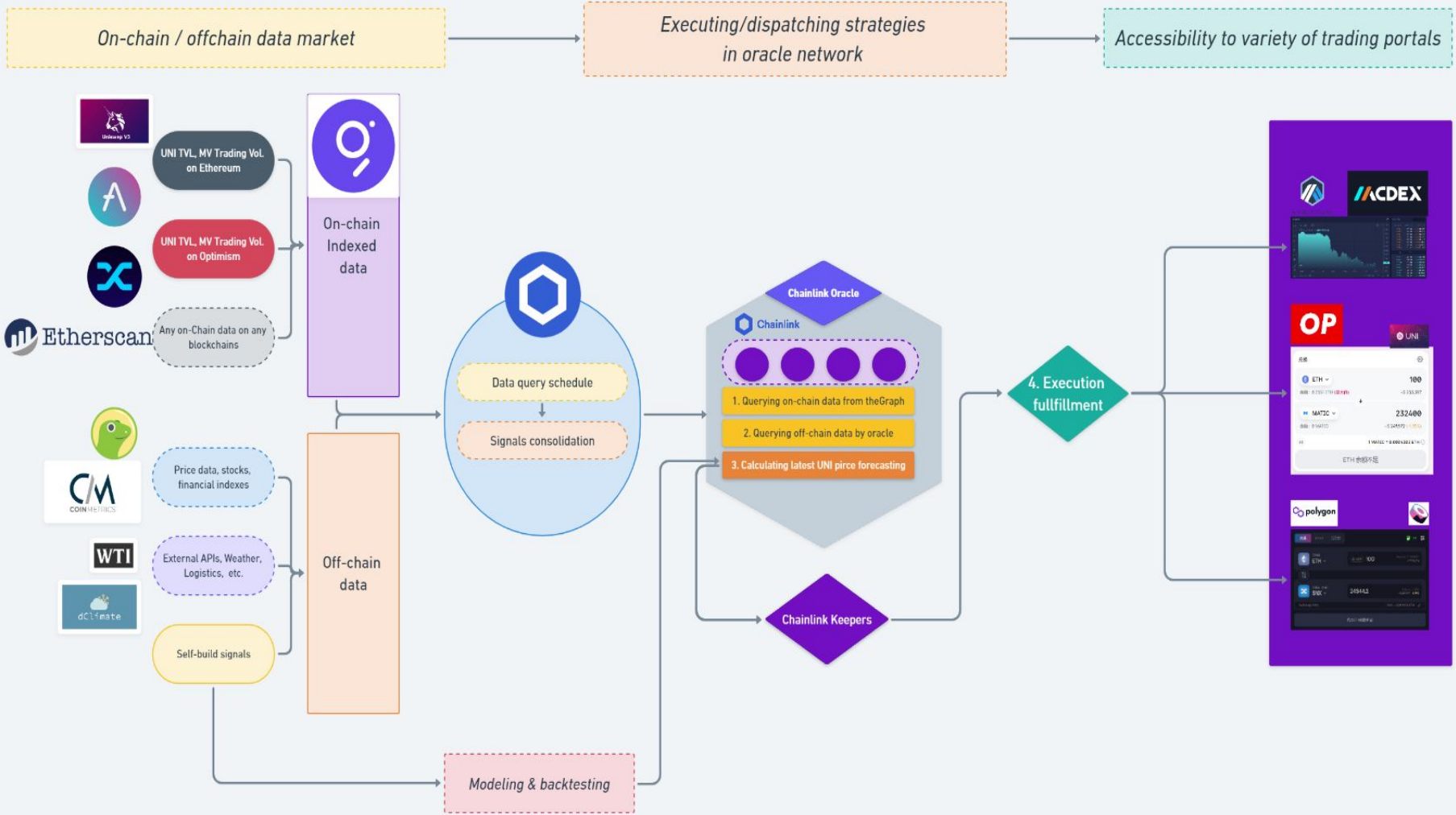
→ Sell out / keep empty position

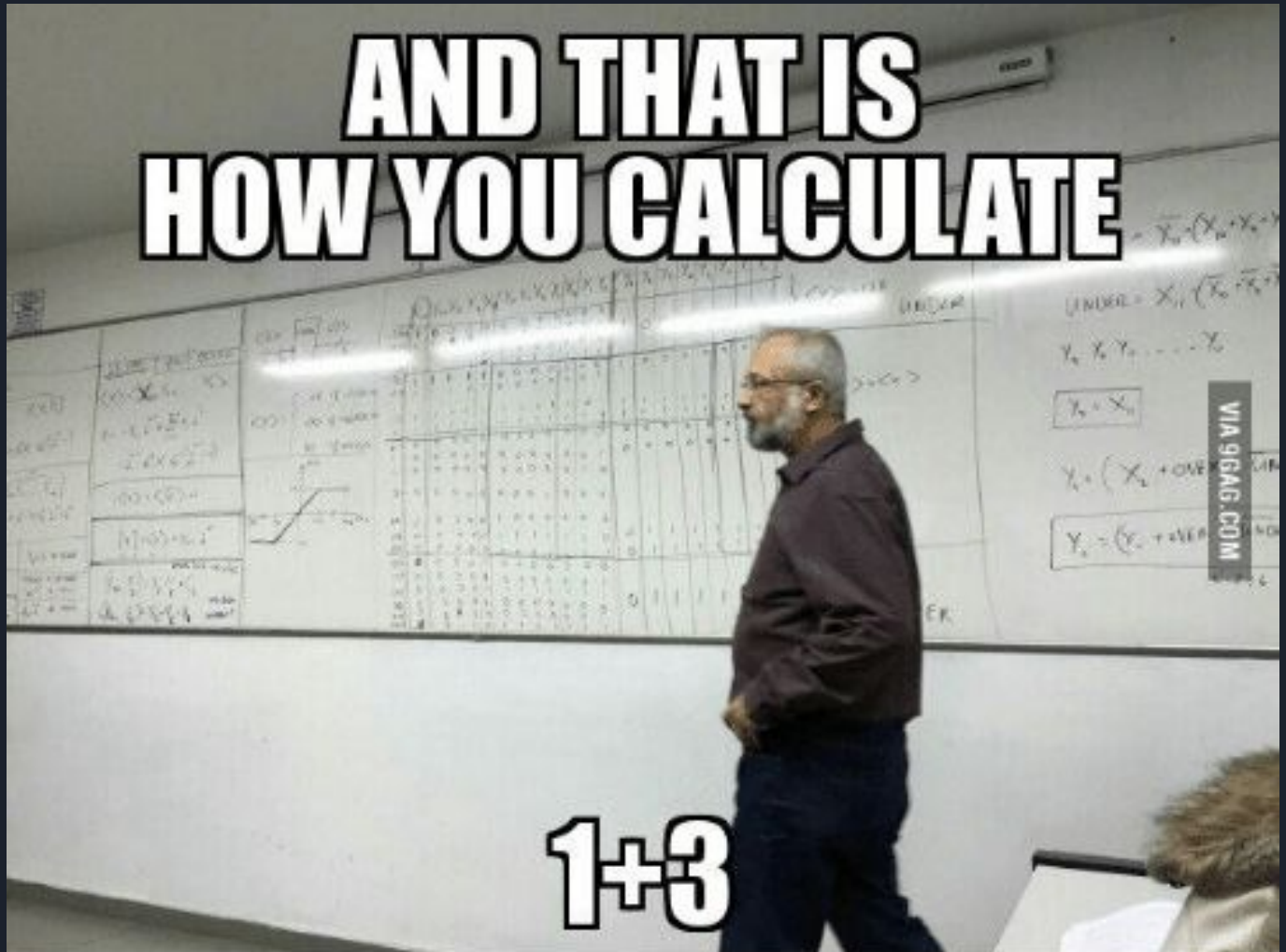
TR DE-QUANT PLATFORM
A DE-QUANTS TRADING PORTALS HUB



With empowering of on-chain trading derivatives / DEXs like MCDEX

→ de-quants can access to the best liquidity seamlessly with no development cost.


On-chain / offchain data market
Executing/dispatching strategies in oracle network
Accessibility to variety of trading portals
UNI TVL, MV Trading Vol. on Ethereum
UNI TVL, MV Trading Vol. on Optimism
Any on-Chain data on any blockchains
On-chain Indexed data
Price data, stocks, financial indexes
External APIs, Weather, Logistics, etc.
Self-build signals
Off-chain data
Data query schedule
Signals consolidation
Chainlink Oracle
1. Querying on-chain data from theGraph
2. Querying off-chain data by oracle
3. Calculating latest UNI pirce forecasting
Chainlink Keepers
4. Execution fullfillment
Modeling & backtesting


AND THAT IS
HOW YOU CALCULATE
1+3
VIA 9GAG.COM

EXTENSIBILITY

De-quant data market

Strategy execution / fulfillment

- Off-chain computation
- Task scheduler
- Algorithm privacy
- modeling & backtesting
- strategy flollow marketing

Trading portals

- DEXs
- Derivatives
- Aggregators
- Index DeFis

TEAM INFOS

Team#16: Treasury research (de-quant platform)

Yu Wenqing - Team leader & product manager
previously worked for BTCChina and Fundamental labs, He is also worked for Chainlink as a Developer advocate and solution architect.

Wei Yang - Smart contract developer
previously worked for multiple internet startups, Wei has strong development experience on Python, Node.js, and Solidity.

Harry Hong - Data engineering
previously worked for Web3 foundation and multiple blockchain startups, Harry has plenty of blockchain technology experience, he is also a crypto enthusiast.

Jamie Cheng - Solution architect
previously worked for BTCChina, Jamie also found a blockchain startup in 2018, he also worked for some famous blockchain projects as architect and technology advisors.

Ms. X - Financial product manager
Ms. X requires to stay anonymous, she worked for a topped crypto corporate institution as a research analyst, she has strong capability in financial data analysis and solid experience on on-chain DeFi data analysis.

OTHER INFO & REFERENCE

Tech spec:
https://docs.google.com/document/d/1lXZnjveEo0auYCogztoEqjKRZnxsyqEQE9CaevpH6O4/edit?usp=sharing

Pitch deck:
https://docs.google.com/presentation/d/1dK8rBqWmJkh5w2fzypOWWTOcGu6qPXXzElGZZADZFxw/edit?usp=sharing

GitHub: https://github.com/Treasury-research/TR-theGraph-Chainlink-EA

Twitter handle: https://twitter.com/wenqingyu

Email: yuwenqingisu@gmail.com

REFERENCE

theGraph explorer
https://thegraph.com/explorer

theGraph Uniswap V3 Official
https://thegraph.com/explorer/subgraph?id=0x9bde7bf4d5b13ef94373ced7c8ee0be59735a298-2&version=0x9bde7bf4d5b13ef94373ced7c8ee0be59735a298-2-0&view=Playground

Dune Analytics - UNI borrow interest rate on AAVE
https://duneanalytics.com/queries/93593

Dune Analytics - Price in UNI
https://duneanalytics.com/queries/93645

Dune Analytics - Uniswap Ethereum vs. Optimism comparison
https://duneanalytics.com/msilb7/Uniswap-v3-Ethereum-vs-Optimism

Arbitrum Developer Page
https://developer.offchainlabs.com/docs/public_testnet

MCDEX technical documents
https://github.com/mcdexio

Test trading page: UNI-USD on Arbitrum Rinkeby
https://app.mcdex.io/trade/00009

MCDEX Perpetual-interface document
https://github.com/mcdexio/documents/blob/master/en/perpetual-interfaces.md

LINK token contract list
https://docs.chain.link/docs/link-token-contracts/

Faucet website
https://linkfaucet.protofire.io/rinkebyarbitrum