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CHICAGO 2023

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Machine Learning For Web3:
Realizing The Potential and The Challenge of Censorship Resistance

Omoju Miller

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Omoju Miller

Founder and CEO Fimio

Previously Technical Advisor to the CEO, GitHub.
UC Berkeley PhD
ML Expert

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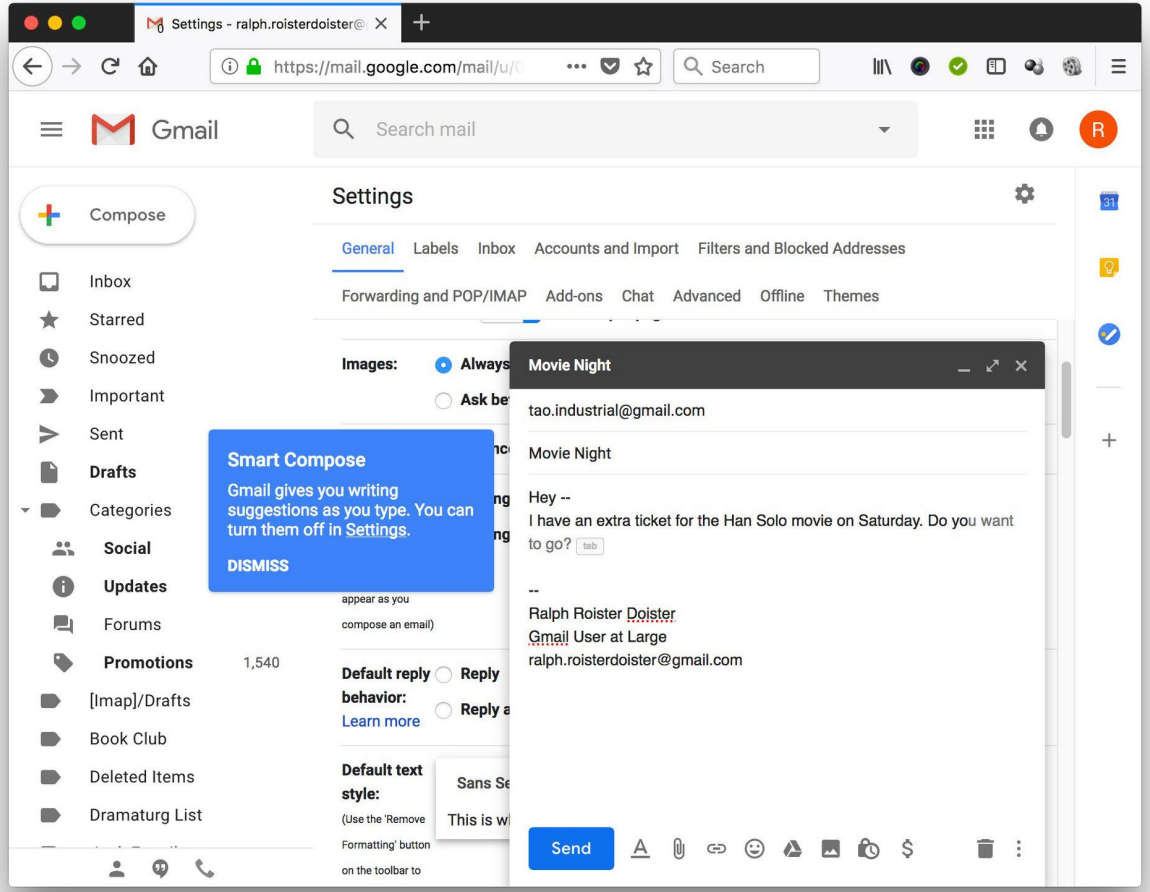
ML Cool

LLMS

Language Models are ML systems that can understand and generate human-like text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(Use the 'Remove Formatting' button on the toolbar to
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Movie Night
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Movie Night
Hey --
I have an extra ticket for the Han Solo movie on Saturday. Do you want to go?
tab
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Ralph Roister Doister
Gmail User at Large
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Send

LLMS

Large Language Models (LLMs) are advanced language models with a massive number of parameters

$$y = mx + b$$

$$y = mx + b$$

Technical preview
Your AI pair programmer
fetch_pic.js
push_to_git.py
d3_scale.js
fetch_stock.js
material_ui.js
const fetchNASAPictureOfTheDay = () => {
return fetch('https://api.nasa.gov/planetary/apod?api_key=DEMO_KEY', {
method: 'GET',
headers: {
'Content-Type': 'application/json',
},
})
.then(response => response.json())
.then(json => {
return json;
});
}
Copilot
GitHub Copilot

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Attention Is All You Need

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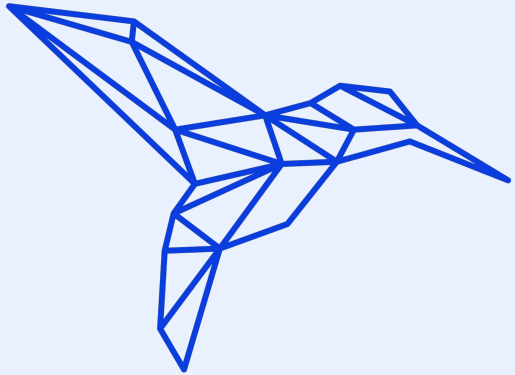
03762v5 [cs.CL] 6 Dec 2017

Abstract

The dominant sequence transduction models are based on complex recurrent or convolutional neural networks that include an encoder and a decoder. The best performing models also connect the encoder and decoder through an attention mechanism. We propose a new simple network architecture, the Transformer, based solely on attention mechanisms, dispensing with recurrence and convolutions entirely. Experiments on two machine translation tasks show these models to be superior in quality while being more parallelizable and requiring significantly less time to train. Our model achieves 28.4 BLEU on the WMT 2014 English-to-German translation task, improving over the existing best results, including



FIMIO

Ran experiments using LLMs for MLonCode

Live Demo of FIMSCO API

https://fimio.gitbook.io/fimio-docs

FIMIO

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Web3 + ML

What is web3?

Next evolution of the internet based on a few key primitives

Distributed

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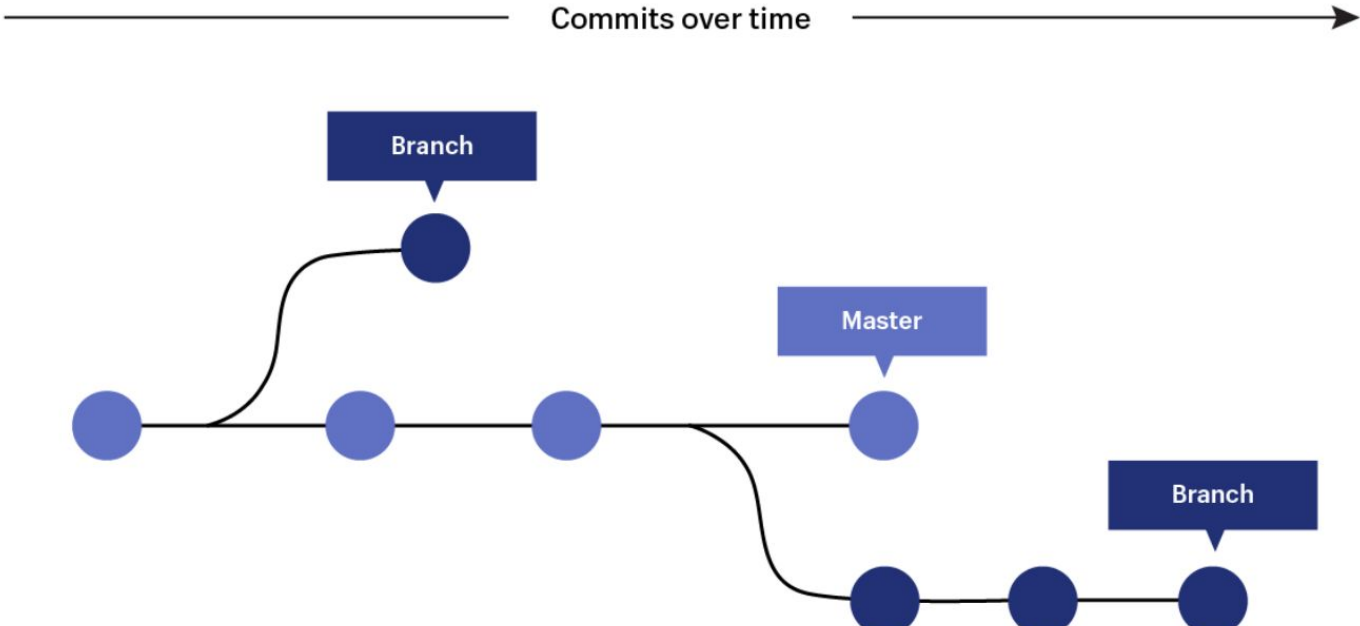


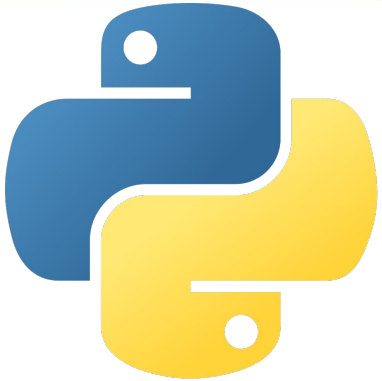
Distributed

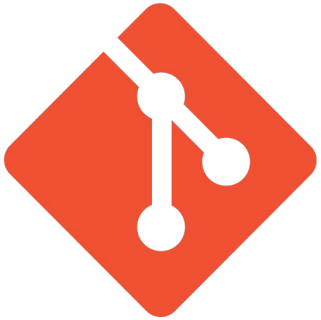
Decentralized

Distributed

Decentralized

Permissionless





git

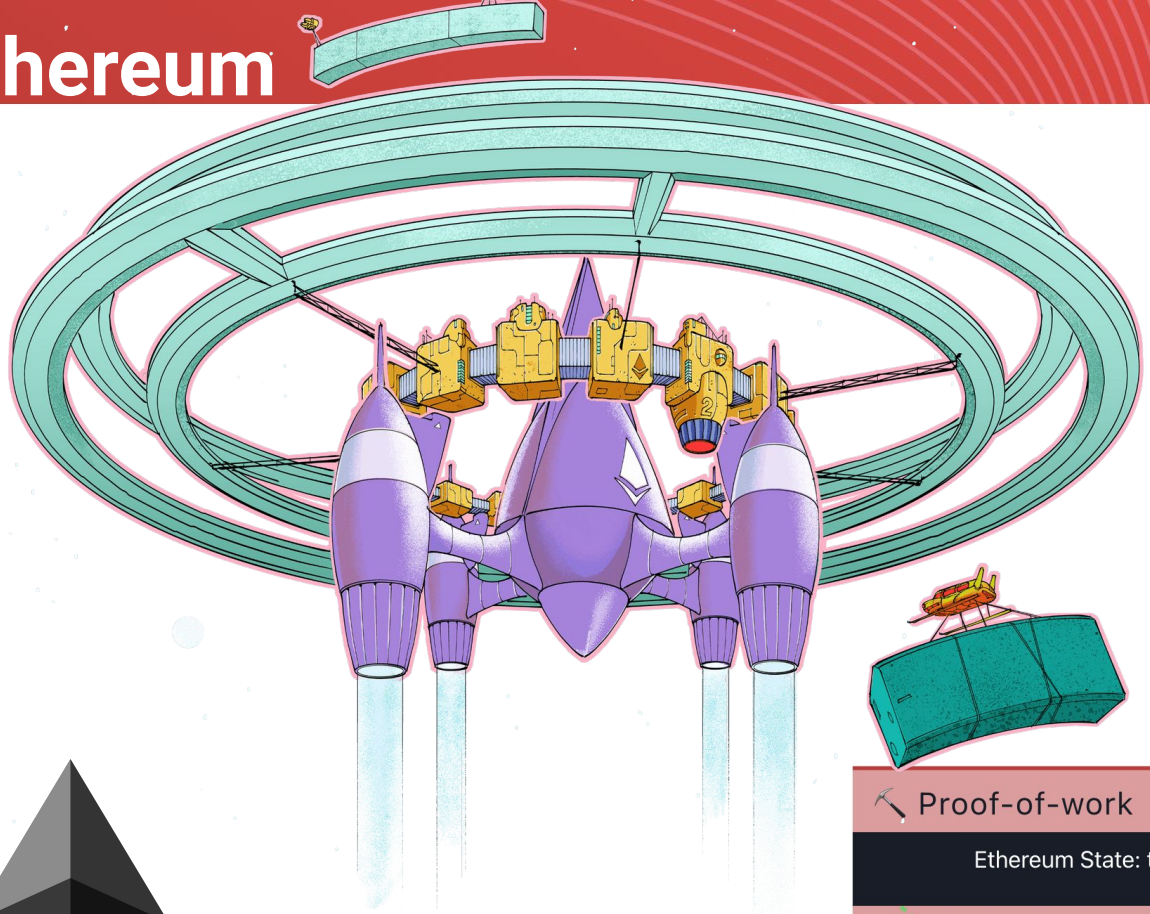
open source

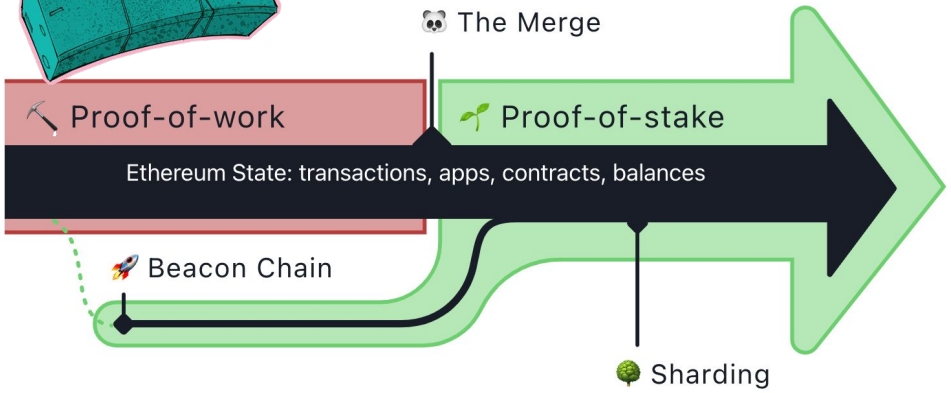
Distributed

Decentralized

Permissionless

Cryptographic authentication




The Merge
Proof-of-work
Proof-of-stake
Ethereum State: transactions, apps, contracts, balances
Beacon Chain
Sharding

Distributed
Decentralized
Permissionless
Cryptographic authentication

Decentralized

Permissionless

Cryptographic authentication

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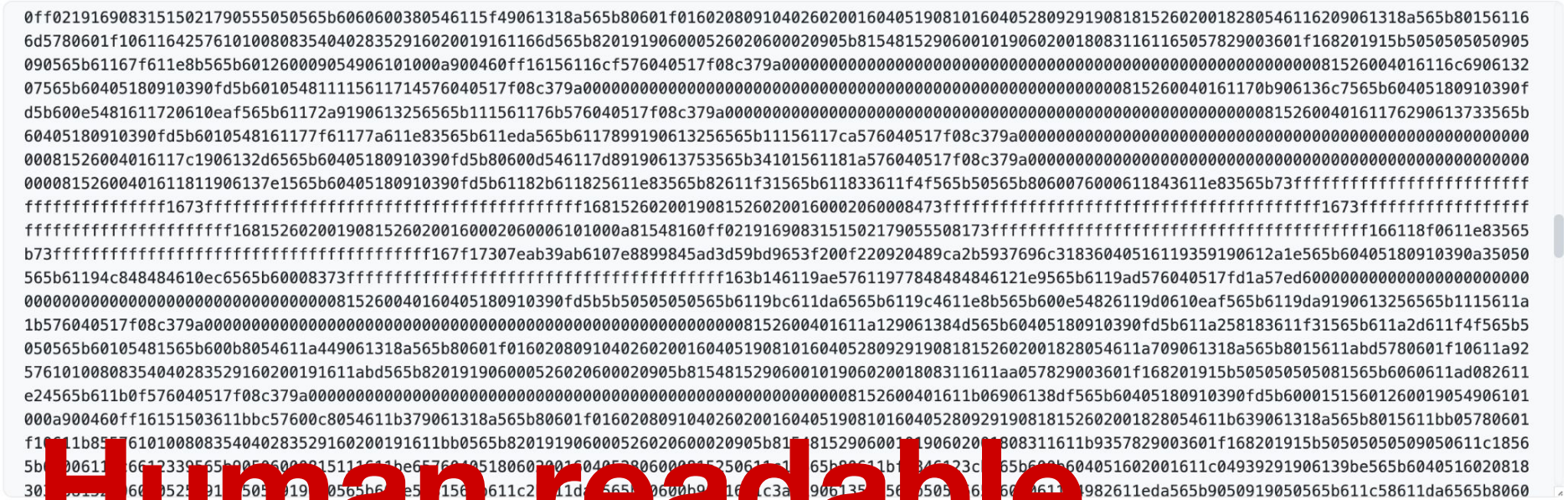
Learnings from doing ML on web3 data

Web3 data optimized for write and not read

Standardized data schema



Human readable code

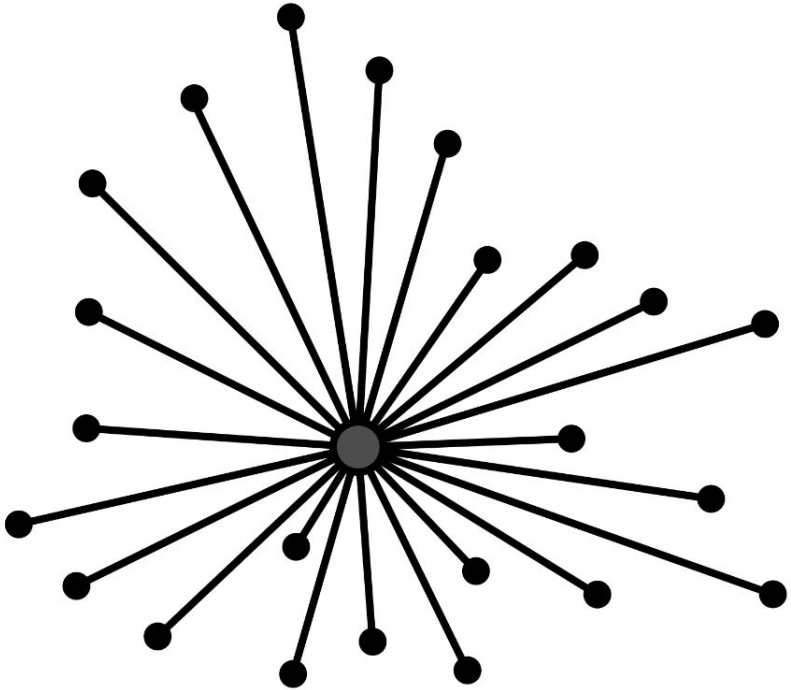
Very nascent developer tooling

web3 is beta-level web infrastructure

Decentralized

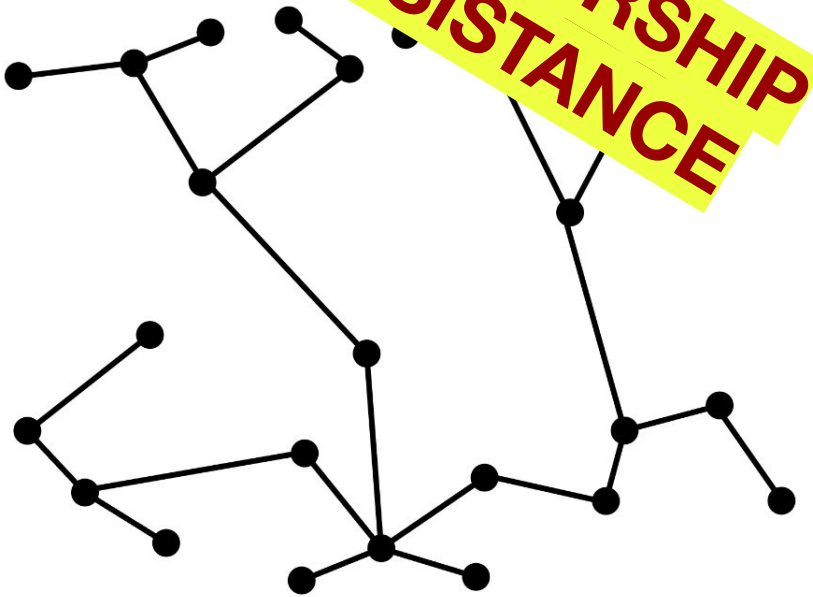
Permissionless

Cryptographic authentication



CENTRALIZED

CENSORSHIP RESISTANCE



DECENTRALIZED

Nodes vs Edges

Censorship Resistant Stack

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Open data

1

All the events and transactions that occur in this app have to be written to a public blockchain or ledger

Mathematically verifiable software

2

You need a way to audit the software to make sure that given x input we get y output. We need proofs.

Decentralized compute

3

Every application lives on some server or is computed in ML case on some server. That server itself has to be provisioned and served in a censorship resistant way

eVoting

Invention list

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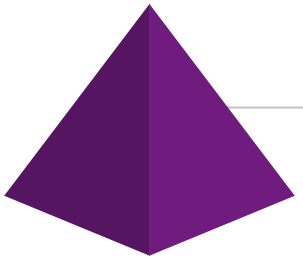


Open data

1 All the events and transactions that occur in this app have to be written to a public blockchain or ledger

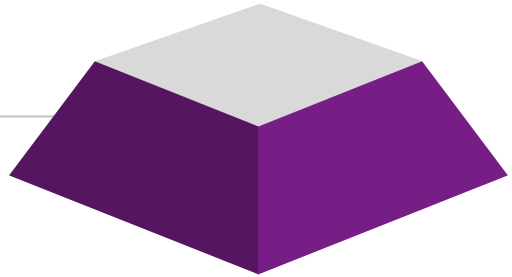
Privacy preserving open records.

Questions

Mathematically verifiable software

2

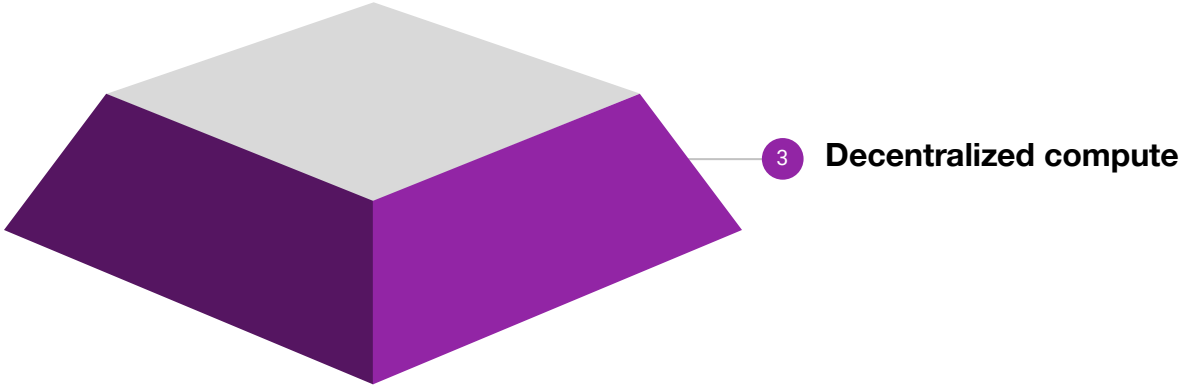
You need a way to audit the software to make sure that given x input we get y output. We need proofs.



Can we improve ZK technology to allow for quick resolution proofs on complex ML training algorithms?

Questions

Do we bring the GPU to the data or do we move the data to the GPU?



We need solutions at every level of that pyramid to truly unlock the promise of web3

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Thank you

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