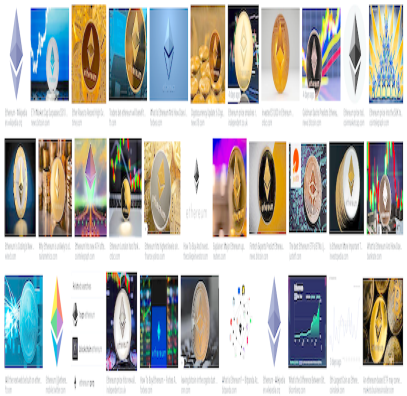

Greening the blockchain

Description

While the 2021 United Nations Climate Change Conference COP26 takes place in Glasgow this week, attention turns to the energy waste of cryptocurrency transactions.

A substantial part of the cost resides with the â??proof of workâ?• (PoW) process by which validating nodes on a blockchain compete to solve a numerical puzzle the solution to which is then circulated to all other verifying nodes and bedded into the latest block of transactions. The winner is also rewarded with some cryptocurrency.

It is a competitive process with potentially high financial rewards, producing an incentive structure that has

> â??triggered a computational arms race among PoW validators. That arms race manifests in PoW blockchains expending an exorbitant level of energyâ?• (1162)

according to a review article by Fahad Saleh.

Itâ??s worth referring to alternative blockchain models. The incentives are high for researchers and developers to devise methods that obviate the exorbitant energy, CPU and electricity costs of validating blocks of transactions, especially in light of the climate emergency and attempts to meet carbon reduction targets.

Proof of stake

One solution thatâ??s offered to the arms race is to develop methods that assign the validation procedure randomly to computers on the blockchain network. The randomness is weighted towards those that are already most heavily invested in the cryptocurrency of that blockchain. This validation process is known as â??proof of stakeâ?• (PoS).

On the face of it, that randomly selected validating computer has no incentive to reject illegal or badly-formed blocks of transactions â?? that it is assigned to validate. The method also implies that control of the blockchain will reside with the richest participants, those with the highest stake. Sahledâ??s article shows how neither factor diminishes the functioning of the blockchain, nor does it cause a â??rich-get-richerâ?• effect.

The developers of the Ethereum blockchain that supports Ether cryptocurrency have asserted that Etherium will switch to a PoS validation method this year (2021), though there are risks in adjusting a system that already lists transactions worth millions of dollars.

Iâ??ve compiled a short bibliography below that canvasses some of the challenges pertaining to the environmental costs of blockchains. This post is also inspired by a series of spirited discussions in my Media and Culture class this week. See other posts that refer to blockchains.

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1. Economics

Tags

1. blockchain

2. cryptocurrency
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