# Cryptocurrency AI Research

## UNESCO Perspective

Ethical

## General Use Bucket

Guided Critical Thinking

## Goal

The main goal of this endeavor is to help students engineer AI prompts that generate responses that reduce or eliminate internal and external biases, while also identifying relevant and reliable sources of professional research.

## Tool used

Copilot

## Prompts

### Human (initial search for sources):

Conduct an extensive search for research papers or industry articles on cryptocurrency. Ensure that the results are from unbiased authors, reputable journals, or academic institutions. The search should prioritize recent publications and articles (within the last 2 years). Provide a comprehensive list of the findings, including the title of the paper, authors, publication date, abstract, and a link to access the full research. For each paper, write a brief summary highlighting the main findings and their relevance to the cryptocurrency. Ensure that all sources are properly cited.

### Copilot:

Here are some recent research papers and industry articles on cryptocurrency from reputable sources:

**Research Papers**

1. **Title:** Deciphering the Blockchain: A Comprehensive Analysis of Bitcoin's Evolution, Adoption, and Future Implications
	* **Authors:** Neelesh Mungoli
	* **Publication Date:** April 5, 2023
	* **Abstract:** This paper provides a comprehensive analysis of Bitcoin, delving into its evolution, adoption, and potential future implications. It explores Bitcoin's cryptographic principles, network architecture, and consensus mechanisms, focusing on the Proof-of-Work model. The economic aspects, regulatory landscape, and adoption in various use cases are also examined.
	* **Link:** [arXiv](https://arxiv.org/abs/2304.02655%22%20%5Ct%20%22_blank) 1
	* **Summary:** The paper offers a thorough understanding of Bitcoin's past, present, and potential future, serving as a valuable resource for scholars, policymakers, and enthusiasts. It highlights Bitcoin's impact on traditional finance and its role in the decentralized finance (DeFi) sector.
2. **Title:** The Future of Cryptocurrency: Gaps, Challenges, and Concerns
	* **Authors:** Hammi et al., Popescu
	* **Publication Date:** 2023
	* **Abstract:** This paper discusses the unique aspects of cryptocurrency as a digital asset, its evolution since the release of Bitcoin in 2009, and the challenges and concerns associated with its adoption and regulation.
	* **Link:** [IACIS](https://iacis.org/iis/2023/3_iis_2023_58-70.pdf) 2
	* **Summary:** The paper identifies key gaps in the current understanding of cryptocurrency, highlighting regulatory challenges and the need for more robust frameworks to ensure its sustainable growth.

**Industry Articles**

1. **Title:** 2023 Annual Crypto Industry Report
	* **Authors:** CoinGecko
	* **Publication Date:** January 17, 2024
	* **Abstract:** This report covers the crypto market landscape, analyzing Bitcoin and Ethereum, decentralized finance (DeFi), non-fungible tokens (NFTs), and the performance of centralized and decentralized exchanges.
	* **Link:** [CoinGecko](https://www.coingecko.com/research/publications/2023-annual-crypto-report%22%20%5Ct%20%22_blank) 3
	* **Summary:** The report highlights the significant growth in the crypto market in 2023, driven by optimism surrounding ETFs and the resurgence of Bitcoin. It provides insights into market trends and the performance of various crypto assets.
2. **Title:** 2023 Year Review & 2024 Year Ahead
	* **Authors:** Crypto.com
	* **Publication Date:** 2023
	* **Abstract:** This report reviews the top crypto events and trends of 2023 and provides an outlook for 2024. It discusses the impact of macroeconomic factors on the crypto market and significant developments such as the Ethereum Shapella hard fork.
	* **Link:** [Crypto.com](https://crypto.com/en/research/2023-review-2024-ahead) 4
	* **Summary:** The report emphasizes the growth of the crypto market despite global economic challenges, highlighting key events like the approval of Bitcoin ETFs and advancements in Ethereum's network.
3. **Title:** Auditing Cryptocurrency Companies
	* **Authors:** The CPA Journal
	* **Publication Date:** March 24, 2025
	* **Abstract:** This article summarizes the risks for investors and customers in the cryptocurrency industry, focusing on the importance of audited financial statements and audit reports.
	* **Link:** [CPA Journal](https://www.cpajournal.com/2025/03/24/auditing-cryptocurrency-companies/) 5
	* **Summary:** The article discusses the challenges faced by auditors in the crypto industry, highlighting the need for transparency and robust auditing practices to protect investors.

These sources provide a comprehensive overview of recent developments in the cryptocurrency space, offering valuable insights into its evolution, regulatory challenges, and market trends. If you need more detailed information on any of these papers or articles, feel free to ask!

### Reaction:

Four out of five suggestions were useful, with the last finding referring to the accounting of cryptocurrency being outside the area of interest for this example.

Human (further drills down on one the suggested research papers)
Summarize a specific paper for me. https://arxiv.org/abs/2304.02655

Summarize the key concepts and innovations presented in the paper in an easy-to-read manner. Provide a concise overview of the objectives, technology, and problems it aims to solve. Describe how Bitcoin is intended to be used and how different it is from government currencies and other cryptocurrencies. Ensure the summary is accurate and avoids any ambiguity.

### Copilot

Sure! Here's a summary of the paper titled "Deciphering the Blockchain: A Comprehensive Analysis of Bitcoin's Evolution, Adoption, and Future Implications" by Neelesh Mungoli1.

**Key Concepts and Innovations**

**Objectives**

The paper aims to provide a thorough understanding of Bitcoin by analyzing its evolution, adoption, and potential future implications. It seeks to explore Bitcoin's underlying cryptographic principles, network architecture, and consensus mechanisms, with a primary focus on the Proof-of-Work model.

**Technology**

* **Cryptographic Principles:** Bitcoin relies on public and private key cryptography to secure transactions.
* **Network Architecture:** The decentralized nature of Bitcoin's network ensures that no single entity controls the entire system.
* **Consensus Mechanisms:** The Proof-of-Work model is used to validate transactions and secure the network, involving miners who solve complex mathematical problems to add new blocks to the blockchain.

**Problems Addressed**

* **Economic Aspects:** The paper examines Bitcoin's price fluctuations, market trends, and factors influencing its value.
* **Regulatory Landscape:** It provides insights into global regulatory approaches, taxation policies, and legal challenges faced by Bitcoin.
* **Adoption and Use Cases:** The paper discusses Bitcoin's impact on traditional finance and its role in the decentralized finance (DeFi) sector.

**Bitcoin vs. Government Currencies and Other Cryptocurrencies**

* **Decentralization:** Unlike government-issued currencies, Bitcoin operates on a decentralized network without a central authority.
* **Limited Supply:** Bitcoin has a fixed supply of 21 million coins, contrasting with fiat currencies that can be printed in unlimited quantities.
* **Transparency:** All Bitcoin transactions are recorded on a public ledger (blockchain), ensuring transparency and traceability.
* **Security:** Bitcoin's cryptographic principles and consensus mechanisms provide a high level of security against fraud and hacking.

**Relevance and Future Implications**

The paper highlights Bitcoin's potential to disrupt traditional financial systems and its growing importance in the DeFi sector. It also addresses emerging trends, technological innovations, and environmental concerns related to Bitcoin mining. Additionally, the potential impact of central bank digital currencies (CBDCs) on Bitcoin's future is evaluated.

Overall, this paper serves as a valuable resource for understanding Bitcoin's past, present, and future, offering insights for scholars, policymakers, and enthusiasts alike.

Reaction:With many crypto projects in the market, you don't want to spend thousands of hours going through endless white papers. Using this Bitcoin-specific prompt can be replicated to summarize any crypto white paper and get a quick, firm grasp of what each project entails.

### Human (ethics focused question):

*Summarize the ethical and environmental concerns associated with cryptocurrency. How do these concerns impact the viability of this technology's future?*

### Copilot

**Ethical Concerns**

1. **Lack of Trust and Regulation**: Cryptocurrencies operate on decentralized networks without intermediaries or central authorities, leading to a lack of trust and regulatory oversight. This absence of regulation can expose investors to risks and limit recourse in cases of fraud or theft 1.
2. **Criminal Associations**: The pseudonymity of cryptocurrency transactions has made them attractive for criminal activities, including money laundering, terrorism financing, and other illicit activities 1.
3. **Speculation and Addiction**: The highly volatile nature of cryptocurrencies can foster speculative behavior and addiction, particularly among younger investors 1.

**Environmental Concerns**

1. **Energy Consumption**: Bitcoin and other proof-of-work cryptocurrencies require substantial amounts of energy for mining. Bitcoin alone consumes more electricity annually than some small countries 2 3. This energy consumption is primarily driven by fossil fuels, contributing to significant carbon emissions 2.
2. **E-Waste**: The hardware used in cryptocurrency mining generates considerable electronic waste. Mining rigs often become obsolete quickly, leading to large amounts of discarded equipment 2.
3. **Water and Land Footprints**: Cryptocurrency mining also impacts water and land resources. For example, Bitcoin mining activities have been shown to have substantial water footprints, equivalent to filling hundreds of thousands of Olympic-sized swimming pools 3.

**Impact on Viability**

These ethical and environmental concerns significantly impact the future viability of cryptocurrency technology:

* **Regulatory Challenges**: The lack of regulation and association with criminal activities may lead to stricter government controls and potential bans, affecting the widespread adoption of cryptocurrencies 1.
* **Environmental Sustainability**: The high energy consumption and environmental footprint of cryptocurrency mining raise concerns about sustainability. Innovations in more energy-efficient consensus protocols, such as proof-of-stake, are essential to mitigate these impacts 2 3.
* **Public Perception**: Ethical issues, such as speculation and addiction, can negatively affect public perception and trust in cryptocurrencies, potentially hindering their acceptance and integration into mainstream financial systems1.

Addressing these concerns through improved regulation, technological advancements, and sustainable practices is crucial for ensuring the long-term viability and positive impact of cryptocurrencies.

Reaction:All of the results regarding ethical concerns come from one source. This suggests a need for additional sources of research.

### Human (specific ethics focused question):

Find additional articles regarding ethical concerns of cryptocurrency. Are there any high-profile legal cases involving cryptocurrency use?

### Copilot:

**Additional Articles on Ethical Concerns of Cryptocurrency**

1. **The Ethical Concerns of Cryptocurrencies**
	* **Authors:** Javier Pardo Torregrosa and Joan Fontrodona
	* **Publication Date:** November 16, 2022
	* **Summary:** This article discusses the ethical challenges posed by cryptocurrencies, including lack of trust, criminal associations, and excessive energy use. It also proposes recommendations to mitigate these negative consequences and promote a more ethical and sustainable digital currency model.
	* **Link:** [IESE Insight](https://www.iese.edu/insight/articles/cryptocurrencies-blockchain-crypto-assets-ethics/) 1
2. **The Ethics Of Crypto: Good Intentions And Bad Actors**
	* **Authors:** George Calhoun
	* **Publication Date:** October 11, 2022
	* **Summary:** This article provides an ethical assessment of cryptocurrencies, highlighting the polarized debate between the potential moral benefits and the negative consequences of the technology. It explores whether cryptocurrencies promote morally good outcomes for individuals or society.
	* **Link:** [Forbes](https://www.forbes.com/sites/georgecalhoun/2022/10/11/the-ethics-of-crypto-sorting-out-good-intentions-and-bad-actors/) 2
3. **The Ethical Implications of Cryptocurrencies**
	* **Authors:** Mountain Wolf
	* **Publication Date:** 2023
	* **Summary:** This article explores the ethical implications of cryptocurrencies, including energy consumption, financial inclusion, privacy, and economic stability. It discusses the challenges and opportunities digital currencies present for a sustainable and equitable future in finance.
	* **Link:** [Mountain Wolf](https://www.mountainwolf.com/insights/crypto/the-ethical-implications-of-cryptocurrencies/) 3

**High-Profile Legal Cases Involving Cryptocurrency**

1. **The Genesis Heist**
	* **Summary:** In August 2024, Genesis experienced a sophisticated phishing attack resulting in the theft of $243 million. This incident highlighted the security vulnerabilities within the crypto sector and prompted a renewed focus on enhancing security measures and user education.
	* **Link:** [Learn Crypto](https://learncrypto.com/feed/articles/biggest-crypto-legal-cases-of-2024-genesis-binance-celcius) 4
2. **Bhatia v. Silvergate Bank**
	* **Summary:** This case, heard in March 2024, addressed the liability of financial institutions in the crypto sector. Plaintiffs argued that Silvergate Bank enabled the loss of billions in customer deposits by ignoring red flags in transactions between FTX and Alameda Research. The court's decision set a precedent for third-party liability and fiduciary duties in the crypto industry.
	* **Link:** [Berkeley Law](https://sites.law.berkeley.edu/thenetwork/2024/12/17/crypto-fraud-or-fiduciary-failure-digital-finance-under-new-scrutiny-bhatia-v-silvergate/) 5
3. **Top 7 Crypto Legal Cases Reshaping the Digital Currency World**
	* **Summary:** This article discusses several high-profile legal cases that have significantly impacted the cryptocurrency industry. These cases highlight the challenges of integrating digital assets into traditional financial systems and the regulatory scrutiny faced by the sector.
	* **Link:** [CoinChoose](https://www.coinchoose.com/news/top-7-most-controversial-legal-cases-in-crypto-world/%22%20%5Ct%20%22_blank) 6

Reaction:These results were very useful. A few of the sources need further analysis to determine their credibility, but the various options with helpful summaries help prioritize which articles/research to utilize.