Architecture for the transfer of NFTs using Trustchain and Euro-tokens

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Abstract

The abstract should be short and give the overall idea: what is the background, the research questions, what is contribution, and what are the main conclusions. It should be readable as a stand-alone text (preferably no references to the paper or outside literature).

1 Introduction

Blockchain is defined as a technological protocol enabling data to be exchanged between different parties within a network without the need for intermediaries. In the case of cryptocurrencies, the decentralisation removes the need of central banks. Moreover, a broader range of applications are emerging such as the possibility to execute pieces of software on a blockchain. (Beck et al., 2016). These are called smart contracts and are ensured to be correctly executed through a consensus protocols. These smart contracts allow for use cases such as digital art which has seen increasing interest in the last months. In this use case, smart contracts are used to store unique certificates of Non-Fungible Assets (NFT) representing ownership over physical or digital assets. These assets are diverse and can range from videos to pictures and songs.

On the other hand, Self-sovereign identity (SSI) is a long-expected technology which is expected to revolutionise how people identify themselves in the internet. Nowadays, our identity is website-centered as opposed to the new user-centered approach of SSI. The appearance of Distributed Ledger Technology (DLT) has enhanced the possibility of a new kind of identity, one in which the user has the control, its data is secure, and can use in all applications.

In this research project, both these worlds, the NFT market and Digital Identities, will be merged allowing verified buyers and sellers to trade NFTs. The architecture proposed will aim to answer the question: "How can we build a stable, scalable and traceable NFT marketplace?". These three aspects are the main contributions of the proposed architecture and often the main lacking capabilities of state-of-the art NFT marketplaces as explained in Section 2.

EXPLAIN THE SECTIONS

2 Problem Description

The main challenge is to create an architecture for the interchange of NFTs in a scalable manner using the stablecoin Euro-token. Currently, the NFT market is mainly built upon the Ethereum blockchain which has been developed with the goal of maximal safety in detriment of scalability. Moreover, cryptocurrencies such as Ethereum are very volatile leading to drastic changes of their value within the same day. Both these factors, add hurdles in the transformation of the traditional art market towards the digital NFT market.
For this reason, an architecture using Trustchain, an accountability-based blockchain, and the stablecoin Euro-token will be proposed as the most optimal solution for a stable, scalable, and highly traceable NFT-market. This architecture will benefit from the highly accountable nature of Trustchain to enhance traceability, key aspect for the adoption in the art field, and scalability. Similarly, the use of the Euro-token will give the architecture a high stability as opposed to the volatile cryptocurrencies use in state-of-the-art NFT marketplaces.

3 Your contribution

In computer science typically the third section contains an exposition of the main ideas, for example the development of a theory, the analysis of the problem (some proofs), a new algorithm, and potentially some theoretical analysis of the properties of the algorithm.

Do not forget to give this section another name, for example after the method or idea you are presenting.

Some more detailed suggestions for typical types of contributions in computer science are described in the following subsections.

Experimental work

In this case, this section will mostly contain a description of the methods/algorithms you will be comparing. Although not all methods need to be described in detail (providing appropriate references are available), make sure that you reveal sufficient details to a reader not familiar with these methods to:

a) obtain a high-level understanding of the method and differences between them, and b) understand your explanation of the results.

Improvement of an idea

In this case, you would need to explain in detail how the improvement works. If it is based on some observation that can be proven, this is a good place to provide that proof (e.g., of the correctness of your approach).

4 Experimental Setup and Results

As discussed earlier, in many sciences the methodology is explained in section 2 and this section only discusses the results. However, in computer science, most often the details of the evaluation setup are described here first (simulation environment, etc.). Very important here is that any skilled reader would be able to reproduce this setup and then obtain the same results.

Then, results are reported in an accessible manner through figures (preferably with captions that allow them to be understood without going through the whole text), observations are made that clearly follow from the presented results. Conclusions are drawn that follow logically from the previous material. Sometimes the conclusions are in fact hypotheses, which in turn may give rise to new experiments to be validated.

You may want to give this section another name.

5 Responsible Research

Reflect on the ethical aspects of your research and discuss the reproducibility of your methods.

6 Discussion

Results can be compared to known results and placed in a broader context. Provide a reflection on what has been concluded and how this was done. Then give a further possible explanation of results.

You may give this section another name, or merge it with the one before or the one hereafter.

7 Conclusions and Future Work

Summarize the research question(s) and the answers to the research question(s). Make statements. Highlight interesting elements.

Discuss open issues, possible improvements, and new questions that arise from this work; formulate recommendations for further research.

ideally, this section can stand on its own: it should be readable without having read the earlier sections.

References

A The obvious

A.1 Reference use

- use a system for generating the bibliographic information automatically from your database, e.g., use BibTex and/or Mendeley, EndNote, Papers, or ...
- all ideas, fragments, figures and data that have been quoted from other work have correct references
- literal quotations have quotation marks and page numbers
- paraphrases are not too close to the original
- the references and bibliography meet the requirements
- every reference in the text corresponds to an item in the bibliography and vice versa

A.2 Structure

Paragraphs

- are well-constructed
- are not too long: each paragraph discusses one topic
- start with clear topic sentences
- are divided into a clear paragraph structure
- there is a clear line of argumentation from research question to conclusions
- scientific literature is reviewed critically

A.3 Style

- correct use of English: understandable, no spelling errors, acceptable grammar, no lexical mistakes
- the style used is objective
- clarity: sentences are not too complicated (not too long), there is no ambiguity
- attractiveness: sentence length is varied, active voice and passive voice are mixed

A.4 Tables and figures

- all have a number and a caption
- all are referred to at least once in the text
- if copied, they contain a reference
- can be interpreted on their own (e.g. by means of a legend)