



Frankfurt University of Applied Sciences

–Faculty of Computer Science and Engineering–

Using Non-Fungible Tokens to Track User Data Across Websites

What this paper is for (Abschlussarbeit zur Erlangung des ...)

Research Projekt - Winter Semester 22/23

Submitted by

Hendrik Gruber

Matriculation Number: 1458240

Advisor : Prof. Gabriela Alves Werb, Ph.D.

DECLARATION (ERKLÄRUNG)

Ich versichere hiermit, dass ich die vorliegende Arbeit selbstständig verfasst und keine anderen als die im Literaturverzeichnis angegebenen Quellen benutzt habe.

Alle Stellen, die wörtlich oder sinngemäß aus veröffentlichten oder noch nicht veröffentlichten Quellen entnommen sind, sind als solche kenntlich gemacht.

Die Zeichnungen oder Abbildungen in dieser Arbeit sind von mir selbst erstellt worden oder mit einem entsprechenden Quellennachweis versehen.

Diese Arbeit ist in gleicher oder ähnlicher Form noch bei keiner anderen Prüfungsbehörde eingereicht worden.

I hereby assure that I wrote the present work independently and that I did not use any other sources than those given in the bibliography.

All passages that are taken verbatim or correspondingly from published or not yet published sources are marked as such.

The drawings or images in this work were created by myself or provided with a corresponding source reference.

This work has not been submitted to any other examination authority in the same or a similar form.

Frankfurt, Todo: 10.02.23

Hendrik Gruber

ABSTRACT

Lorem ipsum ...

CONTENTS

1	INTRODUCTION	1
1.1	Motivation	1
1.2	Goals	1
1.3	Overview	1
2	BACKGROUND INFORMATION	2
2.1	Blockchain	2
2.2	Smart Contracts	2
2.3	Non-Fungible Tokens	2
2.4	Cryptocurrency Wallets	2
2.5	Cookies	2
3	PROBLEM STATEMENT	3
4	CURRENT STATE OF THE ART AND RELATED WORK	4
4.1	Current State of the Art	4
4.2	Related Work	4
5	METHODOLOGY	5
5.1	todo	5
6	RESULTS AND DISCUSSION	6
6.1	Current State of the Art	6
6.2	Discussion	6
7	CONCLUSION AND FUTURE WORK	7
7.1	Conclusion	7
7.2	Future Work and Path Forward	7
Appendix		
	BIBLIOGRAPHY	9

LIST OF FIGURES

LIST OF TABLES

ACRONYMS

NFT Non-Fungible Token

INTRODUCTION

1.1 MOTIVATION

1.2 GOALS

1.3 OVERVIEW

BACKGROUND INFORMATION

In order to discuss possible ways to track user data using NFTs, it is important to gain an overview of the required technologies behind NFTs. These technologies are blockchain, smart contracts, NFTs themselves and cryptocurrency wallets. After these technologies, the function of cookies and how they are implemented in order to track user data is briefly discussed.

2.1 BLOCKCHAIN

Blockchain technology allows for peer-to-peer electronic cash payments. What makes blockchain different from other forms of electronic payments is that it takes out the trusted third party acting as a middleman between each transaction [1]. This means that two parties can execute a secure financial transaction without relying on, e.g. a bank, to verify each transaction.

This is achieved via a distributed ledger system. The stored information is distributed across many nodes, which may be located anywhere in the world. Each transaction is transparent and secure, even without knowledge of each other. Transparency means that each transaction is immutably stored within the blocks. Security is achieved via several measurements. Each block is hashed, meaning that tampering with data within a block leads to the entire block's data changing. The decentralized structure of the blockchain also means that each node has a copy of the blockchain, which makes it difficult to tamper with. [2]

2.2 SMART CONTRACTS

2.3 NON-FUNGIBLE TOKENS

2.4 CRYPTOCURRENCY WALLETS

2.5 COOKIES

PROBLEM STATEMENT

CURRENT STATE OF THE ART AND RELATED WORK

4.1 CURRENT STATE OF THE ART

Online Stores and NFTs / Wallets How is user data typically tracked online? Are there already nfts, sites, and tools to track data using nfts? Challenge of high entry barrier with nfts and wallets. A lot of necessary know-how

4.2 RELATED WORK

METHODOLOGY

5.1 TODO

RESULTS AND DISCUSSION

6.1 CURRENT STATE OF THE ART

6.2 DISCUSSION

CONCLUSION AND FUTURE WORK

7.1 CONCLUSION

7.2 FUTURE WORK AND PATH FORWARD

APPENDIX

BIBLIOGRAPHY

- [1] Satoshi Nakamoto. "Bitcoin: A peer-to-peer electronic cash system." In: *Decentralized Business Review* (2008), p. 21260.
- [2] Michael Nofer, Peter Gomber, Oliver Hinz, and Dirk Schiereck. "Blockchain." In: *Business & Information Systems Engineering* 59.3 (2017), pp. 183–187.