
Atomic Swap

Bitcoin & Ethereum Cross-chain Atomic Swap

Bachelor's Thesis submitted to the
Computer Science Engineering, Software and Multimedia developement orientation of the
Haute Ecole Arc Ingénierie (HES-SO), Switzerland
in partial fulfillment of the requirements for the degree of
Bachelor of Applied Science in Computer Science

presented by
Luca Srdjenovic

under the supervision of
Prof. Ninoslav Marina
co-supervised by
Thomas Shababi

July 2019

I certify that except where due acknowledgement has been given, the work presented in this thesis is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; and the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program.

Luca Srdjenovic
Neuchâtel, 26 July 2019

Abstract

Atomic swaps are practical for exchanging different cryptocurrencies in avoiding any trusted third-parties. This project shows a swap between Bitcoin and Ethereum blockchain using payment channels tools like hashlock or timelock. When the protocol is followed by the both participants, it guarantees the swap without any risk. In the opposite, there is no scenario where someone can control both coins. **Keywords:** Bitcoin, Ethereum, Atomic Swap

Acknowledgements

Thank you

Contents

Contents	vii
List of Figures	ix
List of Tables	xi
1 Introduction	1
2 Bitcoin	3
3 Ethereum	5
Glossary	9

List of Figures

List of Tables

Chapter 1

Introduction

Chapter 2

Bitcoin

Chapter 3

Ethereum

Test Web3 for testing.
Test [Buterin, 2013].

Glossary

Web3 Web3 often refers to `web3js`, the Javascript implementation of the Ethereum JSON-RPC. It may also refer to other implementation in different languages. Overall it is the technology aiming to build the next and more decentralised version of the web 2.0 we know today. 5

Bibliography

Vitalik Buterin. Ethereum: A next-generation smart contract and decentralized application platform, 2013. URL <https://github.com/ethereum/wiki/wiki/White-Paper>.