ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

*Distributed
Computing*

Towards atamarkets with Bitcoin

Master Thesis

Francisc Nicolae Bungiu

`fbungiu@student@ethz.ch`

Distributed Computing Group
Computer Engineering and Networks Laboratory
ETH Zürich

Supervisors:
Christian Decker, Dominic Wörner, Laura Peer
Prof. Dr. Roger Wattenhofer

August 19, 2015

Acknowledgements

I thank Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.

Abstract

In recent years, there has been a widespread expansion of data collection and complex methods to analyze such collected data. Everyone is constantly generating data by using a large range of computers, smartphones, and gadgets. In addition, there is an emerging trend towards the Internet-of-Things technologies that consist of billions of sensor nodes bridging the gap between the physical and the digital world, and creating massive amounts of data, but with no incentive to share.

In order to provide an incentive for the sensor node owners to share the generated data, these sensor networks have to initiate data markets that interested customers can subscribe to and pay for the acquired data. Bitcoin provides an Internet-native payment mechanism and protocols on top of Bitcoin are able to support small payments and avoid high cumulated transaction processing costs.

This thesis proposes a centralized secure scheme that allows data purchasing from any Internet-connected sensor node using the Bitcoin payments. Based on micropayment channels to aggregate payments and minimize transaction fees, and on contracts between the protocol participants to minimize trust, the scheme allows human judgements to be taken out of the loop and supports complete automation.

Contents

Introduction

Design

Implementation

Evaluation

Conclusion

References

Theorem 6.1 (First Theorem)**.** *This is our first theorem.*

Proof. And this is the proof of the first theorem with a complicated formula and a reference to Theorem 6.1. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua.

$$\frac{\mathrm{d}}{\mathrm{d}x} \arctan(\sin(x^2)) = -2 \cdot \frac{\cos(x^2)x}{-2 + (\cos(x^2))^2} \tag{6.1}$$

$\square$

And here we cite an external document [1].

Bibliography

[1] One, A., Two, A.: A theoretical work on computer science. In: 30th Symposium on Comparative Irrelevance, Somewhere, Some Country. (June 1999)

Appendix Chapter