

IIT DELHI

MASTERS THESIS

Improving security & performance of PoW Blockchains using Anchors

Author: Supervisor:

Shadab Zafar Prof. Vinay J. Ribeiro

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Technology

in the

Department of Computer Science and Engineering

CERTIFICATE

This is to certify that the thesis titled **Improving security & performance of PoW Blockchains using Anchors**, being submitted by **Shadab Zafar**, is a record of bona fide work carried out by him under my guidance and supervision. The work presented in this thesis has not been submitted elsewhere either in part or full, for the award of any other degree or diploma.

Prof. Vinay J. Ribeiro Department of Computer Science and Engineering IIT Delhi

June, 2019

Abstract

Improving security & performance of PoW Blockchains using Anchors

by Shadab Zafar

An abstract describes the entire work in a short passage or two.

Acknowledgements

First, I'd like to thank Prof. Vinay J. Ribeiro, without whose guidance and supervision this work would not have been possible. Next, I'd like to thank my co-authors and lab-mates Ovia Seshadri and Aditya Kumar for discussing the finer details of the projects and helping me whenever I was stuck.

This work would've moved considerably slowly had it not been for the helpful folks in the Bitcoin community (Slack, IRC, StackOverflow, Reddit etc.) I've received help from many people, but I'd specially like to thank Gregory Maxwell and Luke Dashjr for taking time out of their lives and helping me figure out the peculiarities of the Bitcoin Core client.

Contents

Abstract	i
Acknowledgements	iii

List of Figures