Ethereum, Smart Contracts and the Optimistic Roll-up

Matthew Armstrong, BA Mod. Computer Science
University of Dublin, Trinity College, 2021

Supervisor: Donal O’Mahony

Abstract: The Ethereum Blockchain is the second most popular platform in the blockchain technology sector. Allowing for the use of smart contracts, which in turn ensures computational versatility on its platforms, it gives rise to a plethora of “DApp’s” and Currency platforms. However, major issues with Ethereum is its latency and delay in transaction speed, as well as the high occurring costs, or “Gas” fees, to send currency from one address to another. In this project we will explore the efficiency of the “Optimistic” layer two “roll-up” in solving this Layer One transaction cost issue. Additionally, A demonstration of the improved scalability brought about by the developments in Layer 2 solutions in the Blockchain and Ethereum Eco-system will be provided.

Keywords: Layer two, Ethereum, Rollups, Scalability, Blockchain, Optimism