

ABSTRACT

Author: Madison Lazaro
Title: Enabling Reliable And Secure Global Climate Change Accounting Using Blockchain Technologies
Thesis Advisor: Hao Wu
Department: Department of Computer Science and Honors College
Year: 2020

The motivation of this study arises from the concern of the impact of anthropogenic induced global climate change (GCC). Assessing possible combative measures against climate change leads to the understanding that these measures will take the form of ‘multi-dimensional’ solution(s), encompassing technical, financial, political, and environmental aspects. To begin to develop adaptive measures against climate change, one must consider global climate accounting which is the process of recording climate actors and their actions in respect to the shared account of the planet’s climate state. Yale’s Open Climate Project was curated in an effort to make this process more efficient. This paper reviews the project which was developed for possible future integration. This thesis implements a component that completes the prototype -- circumnavigating and/or minimizing discussed limitations. In order to do this, we focus on the validation and verification of incoming data. More specifically, implementing format checks to ensure that entered data fit a particular format or pattern. In regards to discussed data verification limitations, we perform distributed retrieval of data as a form of verification, specifically by using the NOAA web services queried via multiple acquisition paths. Then, we focused on designing a consensus mechanism. A final agreed claim emerges from the aggregation of all the claims brought by a plurality of sources proving data is verifiable at the time of the attestation.