Utilizing Blockchain to Revolutionize Privacy and Security of Medical Records

Amirtharaj, Divya (School: Westview High School)

Medical errors caused by a lack of interoperability between healthcare entities are the third leading cause of deaths in United States, with a reported 250,000 deaths in the past year alone. In addition, mass hacks of medical records have quadrupled in the United States over the past two years due to the fact that data is currently stored in a centralized database. Because of this, the goal of my project was to develop a decentralized application to improve the storage, transfer, and security of medical records through the utilization of encryption in Blockchain. The application I developed utilizes Blockchain technology to create a decentralized, secure platform to improve the transfer and security of medical records between patients and healthcare providers. The application allows for patient data to be available over a shared network to improve transfer of records, but maintains data privacy and integrity through the use of asymmetric encryption and hashing. I adopted the current OpenEMR patient-portal to retain ease of use for physicians, and implemented Blockchain and Google API in order to facilitate peer-to-peer transactions. Private, non-critical records can be taken out of the chain of data, encrypted, and stored in the cloud to allow for data transfer while still maintaining patient privacy- a concept which is patent pending.

Awards Won:

First Award of $5,000

Oracle Academy: Award of $5,000 for outstanding project in the systems software category.

Drexel University: Full tuition scholarship $250,000

GoDaddy: $3000 Web Innovator Award

National Security Agency Research Directorate : Second Place Award "Science Security" of $1,000