Abstract:

It provides an advanced, secure sharing system for answering the changing demands of digital healthcare that deals with the sensitive information related to patients that needs to be exchanged among various healthcare providers. Such a system sets a new hallmark in the efficient and safe transportation of medical data like records, diagnostic findings, and treatment plans.

The architecture of mediCrypt permits authorized healthcare professionals to upload files with strong controls over access. An innovation is in the limitation of file access by the patient's attending physician at the point of download; all files downloaded are in read-only format. This ensures integrity of data while still allowing for necessary sharing of information.

The patient data will be safe both in motion and at rest through the application of the advanced cutting-edge end-to-end encryption. mediCrypt uses strict protocols of authentication and role-based access control, where every healthcare professional's identity is authenticated, and only the current relationships between the patients and providers are allowed. A system of tiered access expiration is used to automatically terminate access once specified periods lapse, further strengthening data privacy besides ensuring relevance of access.

The application logging system, based on blockchain, generates an immutable audit trail that records all the accesses of the records without divulging the contents of the records. In this way, it ensures the existent tamper-proof audit mechanism to safeguard adherence and security. It also auto-reports to indicate its compliance with health care regulations, besides its simpler auditing procedures.

The system is optimized with the demanding nature of the healthcare environment and allows secure sharing of data and minimal training. The real-time notifications enhance the efficiency of workflow so that healthcare professionals spend more time on patient care. The access control mechanisms are flexible, so administrators can introduce granular controls derived from treatment relationships as defined by end users across different healthcare providers. Scalability is the ability of mediCrypt to accommodate any facility and size of healthcare. Thus, mediCrypt enables secure sharing of sensitive patient information with strict access controls for taut data integrity. It fosters inter-provider collaboration while keeping the strict controls on data privacy as appropriate.

Thus, the mediCrypt integrates advanced security mechanisms with user-focused design to set the paradigm for trust, efficiency, and transparency within the healthcare ecosystem. This notably enhances the management and sharing of sensitive patient information on healthcare networks, with immunity of the data and access restrictions to relevant providers of healthcare.