

Guest Editorial Preface

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The initial and most popular application of blockchain is cryptocurrency. Currently, blockchain technology has entered into various domains beyond cryptocurrencies. Blockchain technology has paved the way for the decentralization of existing systems. This special issue has 5 papers which have deliberated upon the various aspects of blockchain technology.

The introductory article of the special issue discusses the basics of Blockchain technology along with some of its potential applications. The security threats and risks to Blockchain systems are also reviewed along with the tools and methodologies to prevent and handle it in more sophisticated manner. Smart contracts are present in blockchains which are self-controlled and trustable. It can be integrated across various domains like health care, finance, self-sovereign identity, governance, logistics management and retail. Different case-studies related to five different domains is discussed with the help of use case diagrams are discussed in the 2nd article of this special issue. Finally, a solution for natural disaster management has been proposed by integrating smart contract, digital identity, policies and Blockchain technologies, which can be used effectively for providing relief to victims during times of natural disaster. The 3rd article the issue discusses about the various issues relating to Blockchain technology. The 4th article describes the structure and functionality of OpTrak, a decentralized app implemented using the Ethereum blockchain that targets the opioid epidemic currently plaguing the United States. The last paper of the special issue discusses a blockchain-based model for professional education system using the hyperledger fabric framework. The model also has its positive impact on the verification of graduates for employment or further study. This model has potential to have a complete paradigm shift of the current education system.

The blockchain technology is likely to revolutionize various domains by providing a secure and fast technology for end-to-end users' transaction without the intervention of any trusted third party or central authorities. Although there are various security threats that a blockchain system faces, they can be tackled to a great extent with some of the novel tools and frameworks. Checks and balances will be needed for the system engineer who has the access to the blockchain consensus mechanisms. It is important to guide the technological trajectory so that the blockchain technology can lead to a socio-economic benefit. It is important for the government to provide an environment where entrepreneurs have the incentives to enter the blockchain business and seize new opportunities. A holistic and coordinated effort between the government, business and academia will ultimately take integrity of blockchain technology to higher standards.

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