

# Multilevel Data Protection in IoT and Edge Integration

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## **Abstract:**

Internet of Things (IoT) become a backbone of sensing infrastructure to several mission critical applications such as healthcare, disaster management, and other components of smart cities. Due to the resource constraint sensing devices, IoT infrastructure use edge datacenters (EDCs) for real-time data streams processing. The key requirement of such applications is the need for near real-time stream data processing in large scale sensing networks. This trend gives birth to an area called big sensing data streams. EDCs are deployed to decrease the latency and network congestion by processing data streams and user requests in near real time. Protecting data communications from malicious activity become a key factor as all the communications through the insecure channel. One of the challenging tasks in such applications is to ensure the integrity and trustworthiness of collected data so that reliable decisions are made based on these data. Thus, protecting the data streams from information leakage and unauthorized access are become key challenges. Providing data security for big sensing data in the context of application and near real time analytics is a challenging problem. This talk covers the security aspect of big sensing data in IoT and EDC integration. Applying cryptographic technique is the most efficient way to secure data transmission. Symmetric cryptographic method is explored to provide multilevel data security based on data sensitive level. Multilevel data security purely application specific and where different dataset are of different sensitive level, hence they need different level of security while transmitting through insecure channel or stored in cloud. Followed by, access control method over big sensing data is proposed while stream query processing. This access control mechanism protect data during query processing to extract information. Combination of above two method provides end-to-end security with multilevel data protection. More technical details with applications will be covered during this talk.

## **Short Biography:**

Dr. Deepak Puthal is a Lecturer (Assistant Professor) at Faculty of Engineering and Information Technologies, University of Technology Sydney, Australia. He obtained a Ph.D. in Computer Science from University of Technology Sydney in 2017. He is the recipient of 2017 IEEE Distinguished Doctoral Dissertation Award. His research interest includes Cyber Security, Internet of Things, and Edge/Fog Computing. His research outcome appears in top- notch journals/transactions and conference proceedings as 50 articles with a Google Scholar h-index of 15. He has been serving on the editorial board of several journals or transactions, including IEEE Transactions on Big Data, IEEE Consumer Electronics Magazine, International Journal of Communication Systems (John Wiley & Sons), Internet Technology Letters (John Wiley & Sons) and KSII Transactions on Internet and Information Systems (TIIS). He is a Section Editor (Section - Big Data Security and Privacy) of Encyclopedia of Big Data Technologies (Springer). He is also serves at Program Committee Chair to several IEEE and ACM sponsored international conferences.