Tutorial Paper: *Mobile Big Data: The Fuel for Data-Driven Wireless* [DOI: 10.1109/JIOT.2017.2714189]

- **Key findings –**
  1. Mobile big data has a large potential for developing systems and applications like context aware sensing, human mobility predictions etc. which can play vital a role in developing modern society.
  2. Large amount of data can be collected from various sources like mobile devices (sensors like GPS, Gyroscope etc.), network operators, servers etc.
  3. Real-time processing of such mobile data can have impressive applications like mobile health.
  4. Privacy challenges needs to be handled carefully while dealing with sensitive personal user data.
  5. Data security, Knowledge discovery, computing infrastructure, user modeling all these areas have been discussed in-depth to encourage more research in the field of mobile big data.
- **Key technology insights –**
  1. The 5V characteristic of generic big data: volume, veracity, velocity, verity, value are at the core of BD
  2. Mobile big data along with the 5V of traditional big data consists of addons features like Multidimensional, Real-time and Personalized.
  3. A study has shown that deep learning is much more effective than other MLDM techniques in case of context aware activity recognition using mobile bigdata.
  4. Spatio-Temporal study of human behavior showed the human mobility can be predicated with almost 93% of accuracy.
  5. Context aware sensing and recommendation is another application using mobile bigdata analytics.
- **Relevance to Scalable Computing –**
  1. Modern GPUs can be utilized to accelerate general purpose computing, coupled with clustered computing this parallelism can yield high performance gain over traditional methods.
  2. While building a scalable system for mobile bigdata processing, high importance is given to network latencies between multiple nodes which are tightly coupled with dedicated local networks.
  3. Cloud computing, a loosely coupled systems of many multiple nodes over different geographies could reduce the operating cost of a tightly coupled system at a data center (with a little privacy concern)
  4. Algorithmic parallelization and data parallelization must be considered while designing a software system for large scalable computing architecture.
  5. Key properties to consider while building a scalable/clustered system for mobile data analytic: Scalability, Fault Tolerance and Recovery, Robustness to Stragglers and Data Locality.

Review Paper: *Big Sensor Data Systems for Smart Cities* [DOI: 10.1109/JIOT.2017.2695535]

- **Key findings –**
  1. The lack of common models and approach for handling and integratingBig Sensor data is still a challenge.
  2. Current research considers only offline sensor data, rather than real-time implementation.
  3. IoP Intrnet of people is an interesting area which can be implemented in newly being build smart cities.
  4. Context aware sensor networks used to develop object sensing infrastructure (e.g. Increasing energy efficiency).
  5. A smart cities layer framework is proposed in one of the studies showing logical information flow.
- **Key technology insights –**
  1. Various available communication technologies help sensors in smart cities to connect with internet.
  2. Big data storage technologies like Hadoop, MapReduce used to handle large sensory data.
  3. IoP Internet of People uses people as sensors to get collaborative information to perform complex tasks.
  4. Developing a new sensor cloud infrastructure for handling large sensor data.
  5. Standardization and interoperability of sensor communication will truly enable smart-cities ecosystem.
- **Relevance to Scalable Computing –**
  1. Distributed processing and storage techniques used for large sensor data generated by smart cities.
  2. Use of distributed computing for computational and analytics purpose can reduce energy consumption
  3. High system requirements can also be reduced with the help of scalable computing for data processing.
  4. Different clusters for storing and analysis purposes can accelerate the scalability of the system.
  5. Cellular technology, LPWAN and WPAN are compared as an alternative for network infrastructure.