

# The Big Role of Data Analytics in the Industrial Internet of Things

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**Abstract:** *An IoT architecture is presented in the article which is a predictive way to maintain a group of buses using J1939 sensor data[1]. The authors adopted a minimally viable prototype (MVP) at the Socié'te' de Transport de l'Outaouais (STO) garage in Gatineau, Canada, which was able to capture around 1 GB of uncompressed J1939 data per bus every day.[1] Data is a combination of the sensor reading and consists of data for the wheel speed, vehicle distance, driver pedal positions, engine information, oil information, coolant information, and transmission fluid information. The authors are trying to come up with a variant of Consensus Self-Organized Models (COSMO) named ICOSMO, which can self-fit the sensor selection for anomaly detection.*

*The fourth industrial revolution has changed the face of ancient manufacturing by bringing in new technologies such as sensors, AI, IoT, and big data analytics. This equipment is used to convert factories into intelligent and interconnected systems that generate a huge amount of data. The data collected, when properly processed, can be utilized to improve decision making and reliability and safety. In addition, it makes predictive maintenance inevitable, thus minimizing the downtime and optimization of the performance[2]. Industrial big data is identified by the "5V" elements: volume, velocity, variety, veracity, and value. Due to these characteristics, traditional data processing techniques become inadequate, so these circumstances require novel approaches to the treatment of the numerous and diverse data types that are produced in industry 4.0.*

*The Proposed ICOSMO Infrastructure for IoT Predictive Maintenance consists of the following key activities: 1) finding out which sensor classes are the reasons for the faulty components, 2) adaptation of the sensor class (SC) and the sensor prediction capability (SPC) using fault detection abilities and 3) COSMO sensor configuration has to be rearranged after a certain period of time. ICOSMO has been verified with data from a minimally viable prototype (MVP) deployed on buses at the Socié'te' de Transport de l'Outaouais in Canada. Furthermore, the interviewees said that the framework also includes techniques for the composition and the characterization of industrial big data, which is essential to make a practical predictive maintenance system that can work in smart manufacturing environments*

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