Distributed acoustic sensing as a tool for subsurface mapping and seismic event monitoring: a proof of concept

Giuseppe RUSCICA – *University of Bergamo*

The advent of Internet of Thing (IoT) devices, with computing and connectivity capabilities unthinkable a few years ago, opens up new usage scenarios for collecting and processing data. Thanks to the use of wireless networks (such as LoRaWAN), it is possible to geolocalise and connect long range IoT devices (sensors and actuators) over different areas of the city, and with lightweight lightweight messaging protocols (such as the MQTT standard, based on the Internet TCP/IP protocol) it is possible to interconnect devices and systems over the cloud using less energy and bandwidth. The IoT is increasingly used, for example, in smart city applications, such as smart parking systems and environment monitoring. However, the engineering of such systems is challenging because it has to deal with problems of latency, reliability, lack of bandwidth, and dynamics in the environment, which are difficult to predict and solve using the conventional cloud computing model. An edge-cloud deployment model, in which data processing and control of operations takes place partly as close as possible to where the data is generated (edge computing) and partly on a cloud server, is a key solution to address these challenges