

### 1) Explain how Machine Learning (ML) is related to Internet of Things.

Many IOT devices will generate data what need to be analyzed to create some sense of the data. Also, many of the machine learning algorithms are taught based on the data IoT systems collect to create models for other systems down the pipeline.

### 2) Describe, in general level, an IoT application that uses ML. You don't need to go into technical details, just a brief description of the system.

Let's for example we have state of the art factory with All the possible sensors.

Factory measures inputs and outputs of the product and data is saved. From this data a model can be generated on quality of the product or when it part of the production is need maintenance.

For example the model noticed that energy consumption and temperature is higher than normal in one device and normally this can indicate a failure. The problem was a part that was breaking down and was replaced. If the part broke, the production would have to be halted for the repair costing valuable production time.

Other simple example could be a central heating system. It will check the price of the electricity and warm the heating more. Could detect room that are used or not are lower the temperature in those rooms to save in electricity. The machine learning part could be in the prediction of consumption. This room can usually be lower as its on much lower usage then other rooms. The person only left the room for a bathroom break no need to try and drop the temperature.

### 3) What types of ML systems are there (3 categories)?

- How are they trained by supervised, unsupervised, semi supervised, and Reinforcement Learning.
- Do they learning while analyzing the data or to they need to be taught beforehand? Are they adding more data to the model?
- Compare data point or do they predict trends based on the model.