

## Machine Learning for IoT—HW3

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### Exercise 1 - Data Collection, Communication, and Storage

The reason why MQTT is a better choice than REST as the communication protocol for this application is because MQTT can send and receive data with very low processing power and devices can communicate with each other even with poor internet connection. Furthermore, MQTT is the preferable choice as it has a lower latency compared to REST.

We developed the MQTT's Subscriber in order to keep track of the received mac\_addresses of the devices, if it was never found before we try to create the timeseries (only the first time, to avoid congestion) and then we add the value received.

This allowed us to run ex\_1\_1 in multiple devices, and a single instance of ex\_1\_2 was run in deepnote, able to send the data correctly to redis.

### Exercise 2 - Data Management & Visualization

Method	Endpoint	Description
GET	/devices	Retrieve the list of MAC addresses of the monitored devices.
GET	/device/{mac_address}	Retrieve battery status information of the device with the specified MAC address in the specified time range
DELETE	/device/{mac_address}	Delete the timeseries associated to the specified MAC address.

**GET:** used to retrieve resources from a server. It is said to be a safe method as it does not change the state of the resource in any way.

**POST:** used to create a new resource into the collection of resources on a server.

**PUT:** used to update the existing resource on the server and it updates the full resource.

**DELETE:** used to delete the resources from a server. It deletes resource identified by the Request-URI.

By the definition of each method, because we need to read the list of MAC addresses and battery status information of the device, we choose a GET method and retrieve the informations from the redis server. We also decided to save the mac\_addresses as a set, in order to automatically delete the duplicate thanks to the properties of sets.

When we should delete the timeseries associated to the specified MAC address we chose the DELETE method.