PLANT HEALTHIFY, BY SMART GARDENERS

Abhipsa Kar, Zixu Cheng, Xiaoling La (Smart gardeners)

We have set up multiple monitoring applications for our devices at our homes and workplaces, hoping to extract data from the environment in a meaningful way. But in the fast-paced world, is it easy to keep an eye on the data collected by these monitoring applications? The best way to handle a lot of data is to sort out the most critical data that requires immediate attention. The 'Plant Healthify' gauge is an example of a system that picks the most actionable data and displays on in the physical environment to gain the user's attention.

It uses the MQTT environment monitoring data pushed by several plant monitors connected within the CASA office at Bartlett school of architecture. While it may be daunting for the user to go online at regular intervals to check the data feed, the 'Plant Healthify' gauge eliminates this need by extracting the most essential parameter (moisture data) on a gauge display that takes a glance to read.

During the group project for the sensor data visualization module for Connected environments master's course at University College London, the setup is divided into a physical device and its digital twin. The physical device uses a simple Arduino based setup coupled with an LCD and servo motor to show the percentage on a range of 180 degrees. The digital device uses the Unity3D application to create the augmented reality scene and Fusion 360 to create the 3D model.

The physical device(gauge) shows the percentage of plants (connected to the network) that needs urgent attention based on moisture levels. An LCD on the gauge shows the number of online devices and the names of the plant monitors that need watering. On the other hand, its digital counterpart is based on the Augmented Reality marker recognition technique. Using pictures of the plants as image markers, the AR application recognizes the plant, fetches its moisture, humidity and temperature details from the MQTT server and augments them to the marker. The digital scene consists of a gauge that shows the moisture value and a text panel that shows the temperature and humidity values. Additionally, a 2D cutout of the plant is also shown for clarity.

Pls note that the MQTT data published on the plant topics have an interval of about 1 min. Hence, it is suggested to wait for a minute to get the data loaded on the gauges.