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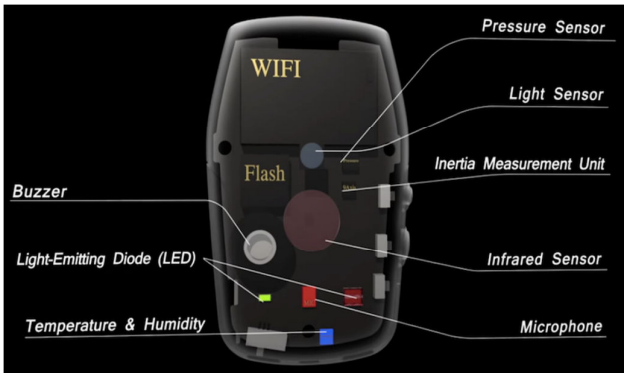
SENSg v4 'Curriculum mode' User Manual

What features does the SENSg have?

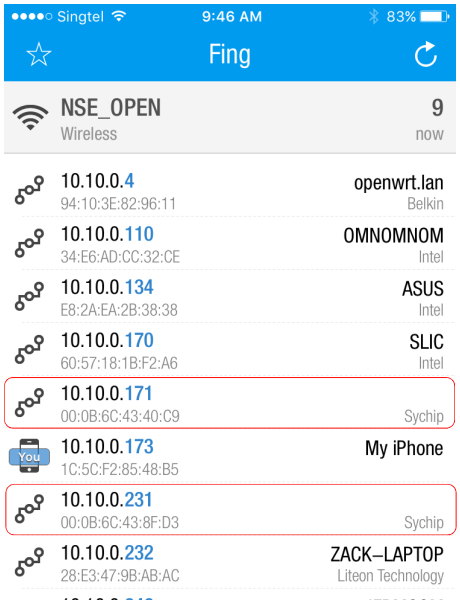


The SENSg senses information about temperature, humidity, atmospheric pressure, light levels, noise levels, and motion. In 'curriculum mode', the device stores and transmits sensor data in real time acting as an access point. The sensor broadcasts a network name, which you can connect to with your smartphone or computer. Once connected, you can view your data and participate in your classroom experiments by following the instructions in this manual.

Quick Start

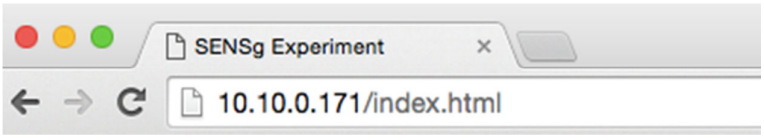
1. Switch on your mobile phone/router and configure the network 'NSE_OPEN' with the password 'hotspot_nse'. If you need instructions on how to configure a mobile hotspot look:
For Android: http://www.androidauthority.com/mobile-hotspot-android-hotspot-android-customization-631280/
For iOS: https://support.apple.com/en-us/HT204023
* The SENSg device will only need to be connected to the hotspot but will not consume any data for internet access, unless you load any other web pages while connected to the hotspot.

2. Starting with the SENSg powered off, use a pen or pencil to carefully toggle the switch found at the bottom of the SENSg device to the 'ON' position. Make sure there is only one NSE_OPEN hotspot setup in the vicinity when you do. Wait for the green light to flash on the SENSg to confirm that the device is connected to the NSE_OPEN hotspot.

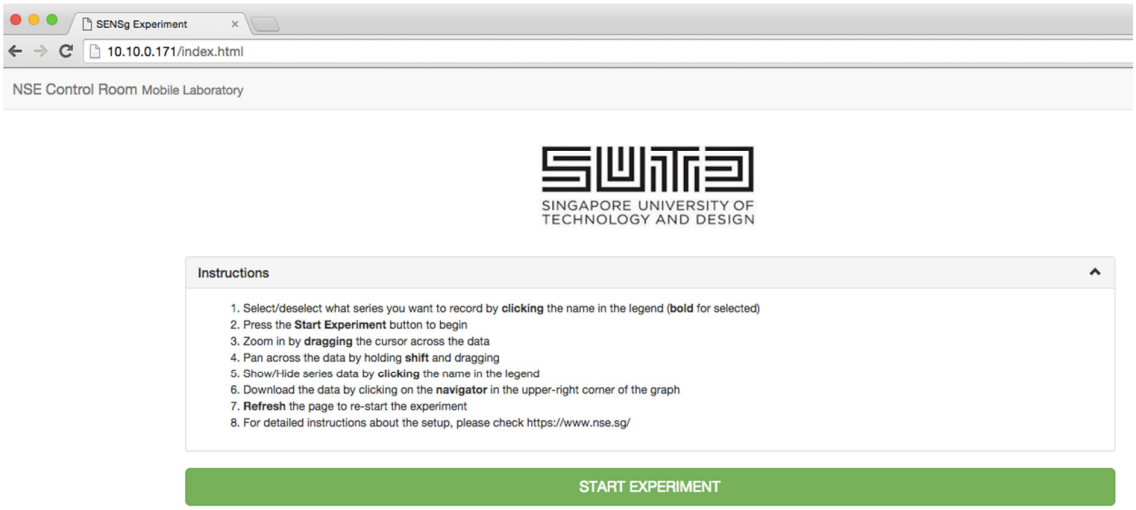


3. Download and install the software 'Fing' (https://www.fingbox.com/fing/features) on another device, connect the device to the same hotspot and lookup on Fing which devices are connected to the hotspot with the name 'sychip' and record it's IP address. If you have more than one SENSg device connected to the hotspot, lookup for your device MAC address from the S/N-MAC address list provided to you. Once you know your device MAC address, you can find the correct IP address from Fing.

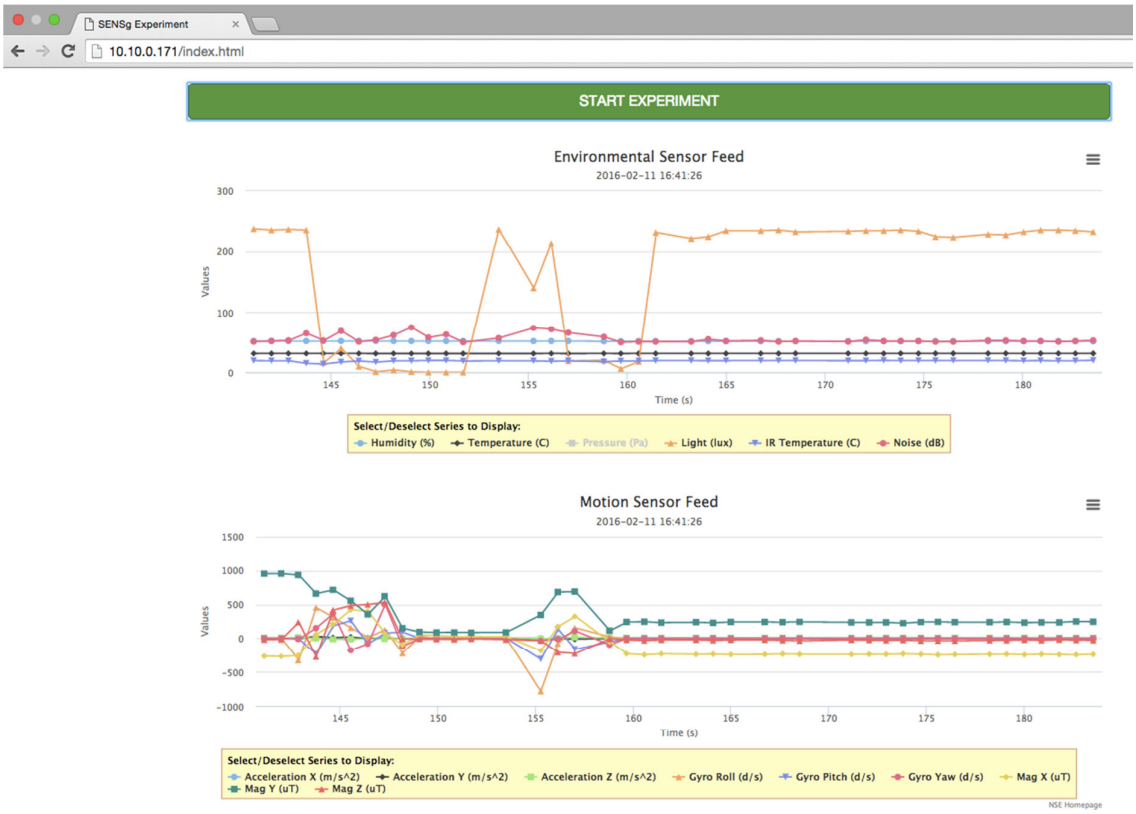
4. Open a browser (Firefox or Chrome) and navigate to the IP address which you recorded in Step 3.



5. You should see the ‘curriculum mode’ homepage loading.



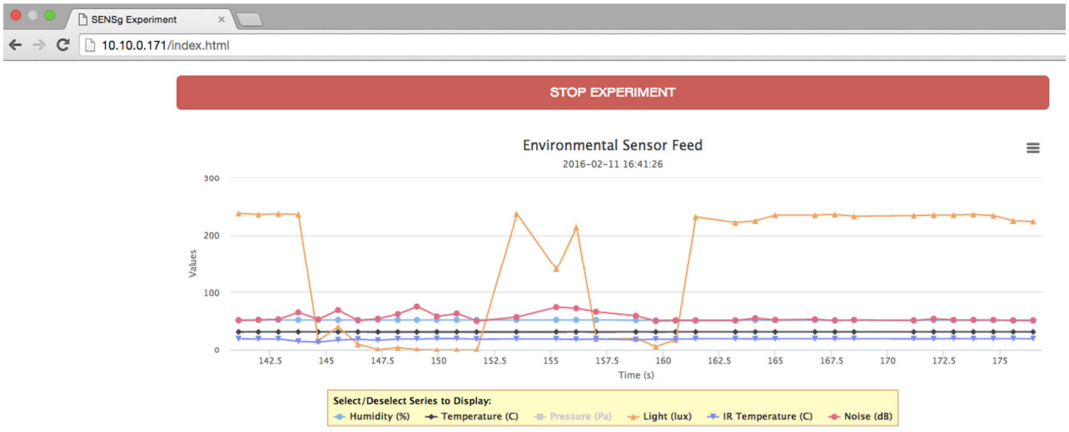
6. You can select necessary parameters and start the experiment to view your data in real time.



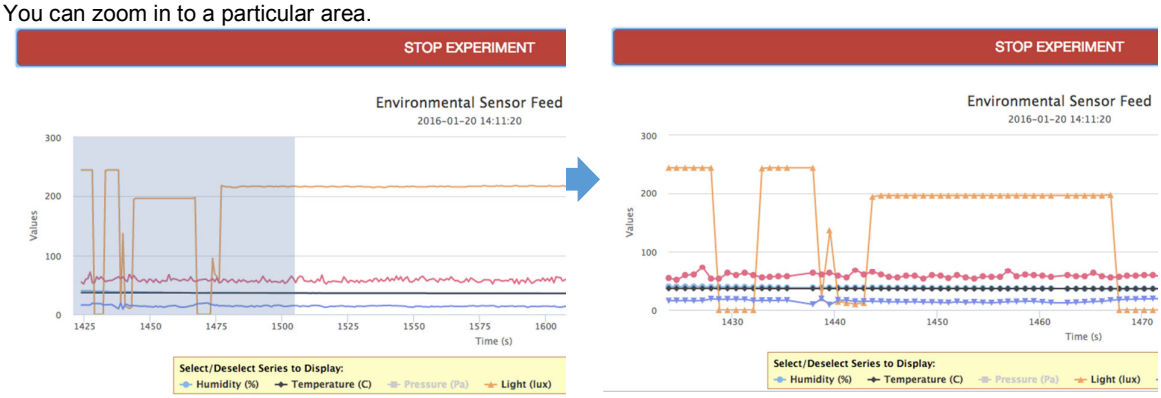
7. SENSg will blink red (on the right side) if the device requires charging. There will be a constant red light on the left side while it’s charging.

How do I check my SENSg Data?

The SENSg allows you to view your sensor's data in real-time for classroom experimental analysis. This figure highlights the interface:

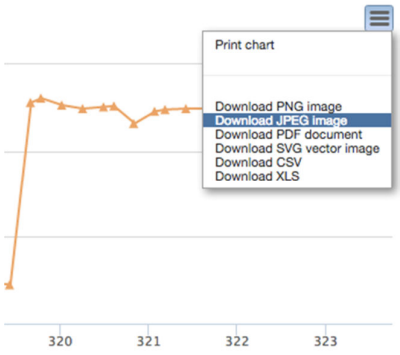


You can zoom in to a particular area.



Data Saving

Many of the classroom experiments require you to save a screenshot or download an image file in the form of JPEG/PNG/SVG. You can also download the data as an excel sheet or CSV file. The data files have this format for their column headers:



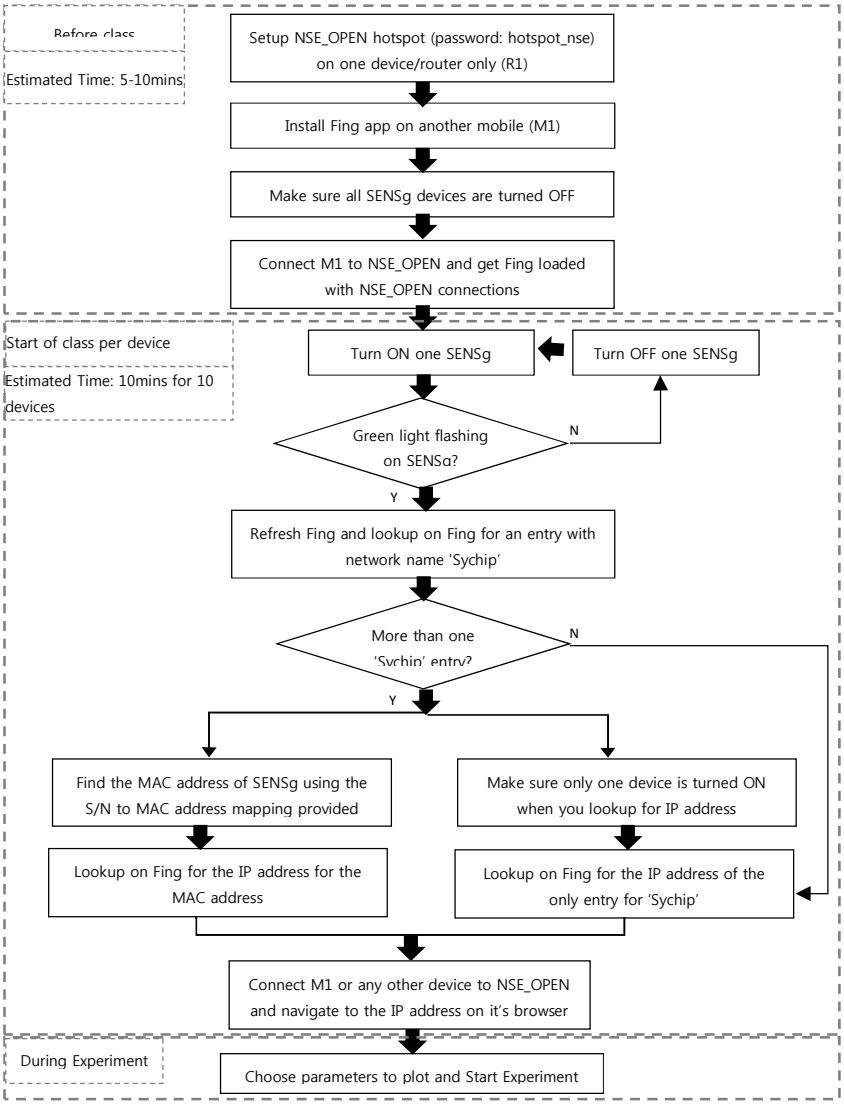
Environmental Sensor Feed	Motion Sensor Feed
1. Time 2. Humidity (%) 3. Temperature (°C) 4. IR Temperature (°C) 5. Pressure(Pa) 6. Light (lux) – relative light level 7. Sound Pressure Level i.e. Noise (dB)	1. Time 2. Acceleration-X (m/s^2) 3. Acceleration-Y (m/s^2) 4. Acceleration-Z (m/s^2) 5. Gyro Roll (d/s) 6. Gyro Pitch (d/s) 7. Gyro Yaw (d/s) 8. Magnetic Field X (uT) 9. Magnetic Field Y (uT) 10. Magnetic Field Z (uT)

Charging and Care

The SENSg are sensitive measuring devices, and may not be dropped or exposed to water. Please ensure that the devices are always attended while in use. Never leave the device unattended while measuring for any reason. It is good practice to secure the device to yourself using the lanyard and clip while measuring.

The devices may be charged from a standard micro-USB cable plugged into your computer or into the wall. They accept 5V and draw no more than 500 mA, just as standard mobile phone chargers supply.

Teacher's Guide



Frequently Asked Questions

1. My sensor won't turn on, what do I do?

The sensors will flash blue and then yellow when starting up and will then turn green upon connecting to the hotspot. The chances are that the sensor is working perfectly. If it doesn't light up, please see your teacher and try to charge the device.

2. My sensor's LED is blinking red, what do I do?

This means that your device requires charging. Please plug it in using a micro-USB cable similar to what is used to charge your android phone.

3. Some devices have trouble connecting to NSE_OPEN, while others are connecting fine. What could be wrong?

Your hotspot would have a maximum number of concurrent connections it could support. Check on Fing how many are already connected to the same NSE_OPEN hotspot. Try to limit the number of connections made on the hotspot. Otherwise, try setting up a second hotspot (further away from the first) to get new devices connected.

4. I am trying to load the 'curriculum mode' home page of one SENSg from more than one device (laptops/smart phones). The real time plotting doesn't work. Why?

In curriculum mode, the data of your SENSg is designed to be viewed from only one device at a time. If you want to view the data of the same SENSg on multiple laptops/smart phones, you may close the page on one device before starting the experiment on another.

5. Something unexpected happened with the SENSg, what do I do?

Send an email to nse@sutd.edu.sg and let the SENSg team know. Include your name, contact information, and a description of what happened and screenshots or snapshots where applicable.

6. I dropped my sensor or it got wet, what do I do?

Write down exactly what happened at the back of this book. You won't be punished for accidents, but you can save a lot of time by letting us know.

User Log

Please use this part of the notebook to record anything which happens during your experience with the sensor that is out of the ordinary.