**Moisture Meter:**

Looked into various moisture meters available. Moisture meter is something which measures moisture content or traces of water in suitable surface (concrete, wood, gypsum). But it is completely invasive in nature, either a probe needs to be inserted into the material or a metal surface or disk should contact or touch the surface under test which is not suitable for our use case. So only solution we have is to use thermal camera (hygrometers or moisture meters won't work).

**FLIR IR cameras:**

1) FLIR MR176 and MR160 generates 80 \* 60 res image which corresponds to Lepton 2.5 resolution.

2) FLIR MR277 and MR265 generated 160 \* 120 res image which corresponds to Lepton 3.5 res.

Higher resolution is preferred for wider measurements and more accuracy. So, we can go with Lepton 3.5 which is the one being used in high end FLIR moisture meters

**Firmware or Algorithm:**

Found a GitHub repo containing firmware to interface Lepton 3.5 with ESP32. We can use that code and it also a Linux/windows desktop application which we can use to generate images and test prototype.

"get\_image" function returns radiometric data from lepton 3.5 to ESP32 which shares this info through Wi-Fi to the desktop application where an image file can be generated and saved which will have all pixel by pixel temperature data. With a ref temp for water spill on floor we can write simple code to compare the string obtained. The string will contain the temp data of each pixel which can be compared with a ref temp and if a group of pixel's temp data matches, we could tag the pixels with unique markers and tell the user that there is a water spill (at the end it can be either 1 or 0 with the location of the spill marked). "1" for yes (water spill) and "0" for no (no water spill).

The desktop application source code is also available open source on GITHUB which we can modify to automate the process of generating and saving images.

GITHUB Link: <https://github.com/danjulio/lepton/tree/master/ESP32/tCam-Mini>

**Questions:**

1) which sensor to be used (ref- Lepton 2.5/3/3.5), or if u find anything better - Lepton 3.5

2) Required hardware/mcu (Ref- esp32) or if find anything better - ESP32 WROOM 32E

3) required Software/sdk/algorithm to detect wet-floor - Firmware available (little add-ons and modifications required)