CanConnect
Sensor Module

Who is CanAssist?
CanAssist is a UVic based organization dedicated to developing and delivering technologies, programs, and services that improve the quality of life of seniors and people with disabilities.

What is CanConnect?
CanConnect is a video calling software run on an Apple iPad that allows the user to easily conduct video calls and connect with their friends, family and caretakers.

The application is designed to fill a gap in traditional video calling services, such as Skype, which proved too difficult for seniors and people with disabilities to operate.

The primary goal of the application is to reduce the overall complexity of the iPad and allow any elderly or disabled person easily conduct video calls.

CanConnect Sensor Module
Our contribution to the CanConnect system is a sensor module that connects via Bluetooth to an iPad running the CanConnect software.

The function of the module is to monitor the environment around the iPad, allowing the CanConnect software to adjust and react based on the conditions of its environment.

The goals of the project were to design a module capable of the following:
- Detect motion within the entire room, with a 360-degree field of view
- Detect a user’s distance from the iPad
- Monitor if the lights are on or off within a room
- Monitor the temperature and relative humidity within a room
- Transmit all information to the iPad wirelessly, via Bluetooth

Conclusions & Future Work
One way the device could be improved is by means of a manual light level threshold tuner integrated into the PCB.

This could be achieved with a small potentiometer and digital display allowing the user to adjust the light level threshold required for best performance based on the ambient light levels present in the room.

This would eliminate the need for the user to modify and re-upload the sensor module’s code each time this parameter needs adjusting.

Final Design & Performance
The final PCB with integrated components features four environmental sensors controlled by a Nordic nRF52840 microcontroller. Labels 1 through 5 show final placement of the sensors on the circuit board.

The largest component, the motion sensor, is centered on the front and back to provide the greatest field of view and to balance the device.

The temperature and humidity sensors are placed in the lower left corner on the front side of the PCB to ensure accurate readings by mitigating the potential of self heating from other components.

This project was chosen due to its tremendous social impact with the possibility to help improve the lives of seniors and people with disabilities with use of the CanConnect system.

It is our hope that our addition to the CanConnect system will further help foster independence to its users by providing them autonomy and reducing their dependence on others.

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