Mideumi Weather Capsule

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People usually do not recognize the seriousness of indoor air pollution including particulate matter or toxic gases generated by cooking, etc. This study examined that these kinds of situations could be avoided simply with a smartphone and my device, the “Mideumi Weather Capsule” which was designed for the task. The device uses an Arduino Mega 2560 R3 board and was programmed with the Arduino C language. It connects to the Internet through Wi-Fi, and settings can be changed via Bluetooth communication. MySQL with PHP was used to develop the database and Android Java Language was used to create the user application. The device automatically sends data on temperature, humidity, concentration of particulate matter, toxic gases, and other air-related information to a local database server. Then, the smartphone application acquires and processes the data and shows not only the raw observed data, but also warnings or other notifications in certain situations. The device can also be paired with a smartphone via Bluetooth in the case Wi-Fi is not available (e.g., checking the gas concentration inside a drain before cleaning). It also has additional functions; for example, 1) the users can set the warning criteria themselves and 2) they can include a function to warn about dew condensation by interlocking it with another device outside the house. My “Mideumi Weather Capsule” will reduce the number of victims of indoor air pollution; and, since the device is cost-efficient, it could be easily propagated to developing countries, helping people around the world live healthy.

Awards Won:

Third Award of $1,000