Monitoring and Warning System for Forest Fire Hotspots in Myanmar

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(November 29, 2022)

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Outlines

❑ Forest fire areas in Myanmar

❑ Environmental Hazards

❑ Problem Statement

❑ System Architecture

❑ Result and Discussion

❑ Conclusion

Forest Fire areas in Myanmar

❑ Myanmar is prone to almost all natural hazards like flood, drought, storm, earthquake, forest fire hotspots, and landslide and so on.

❑ Among these natural hazards, forest fire hotsport are most frequent occurred all over the country. Forest fire hotspots are mainly found in the states of Kayah, Shan, Bago, Nayi Pyi Taw, Magway, Mandalay, Chin, and Kayin.

❑ Forest fire hotspots are most common in summer season in Myanmar, are mainly caused by natural hazards and human made behaviors, especially burning garbage, discarded cigarettes.

Environmental Hazards

❑ The smoke caused by the fire is very harmful to the environment.

❑ Smoke in the environment causes the following problems and harms health the people living there:

- – air pollution
- – itchy eye
- – shortness of breath and
- – other respiratory problems

Problem Statement

➤ Lack of Monitoring System based on WSN

➤ Disaster information can not be sent to people in time.

➤ Lack of knowledge on natural disasters

➤ Lack of a Public Database

➤ it is difficult to obtain data related to the forest fire warning system.

➤ Limitation for Supporting Plan

➤ Limited of funding

➤ In some areas, weakness of using technology.

Architecture of the forest fire monitoring and warning system
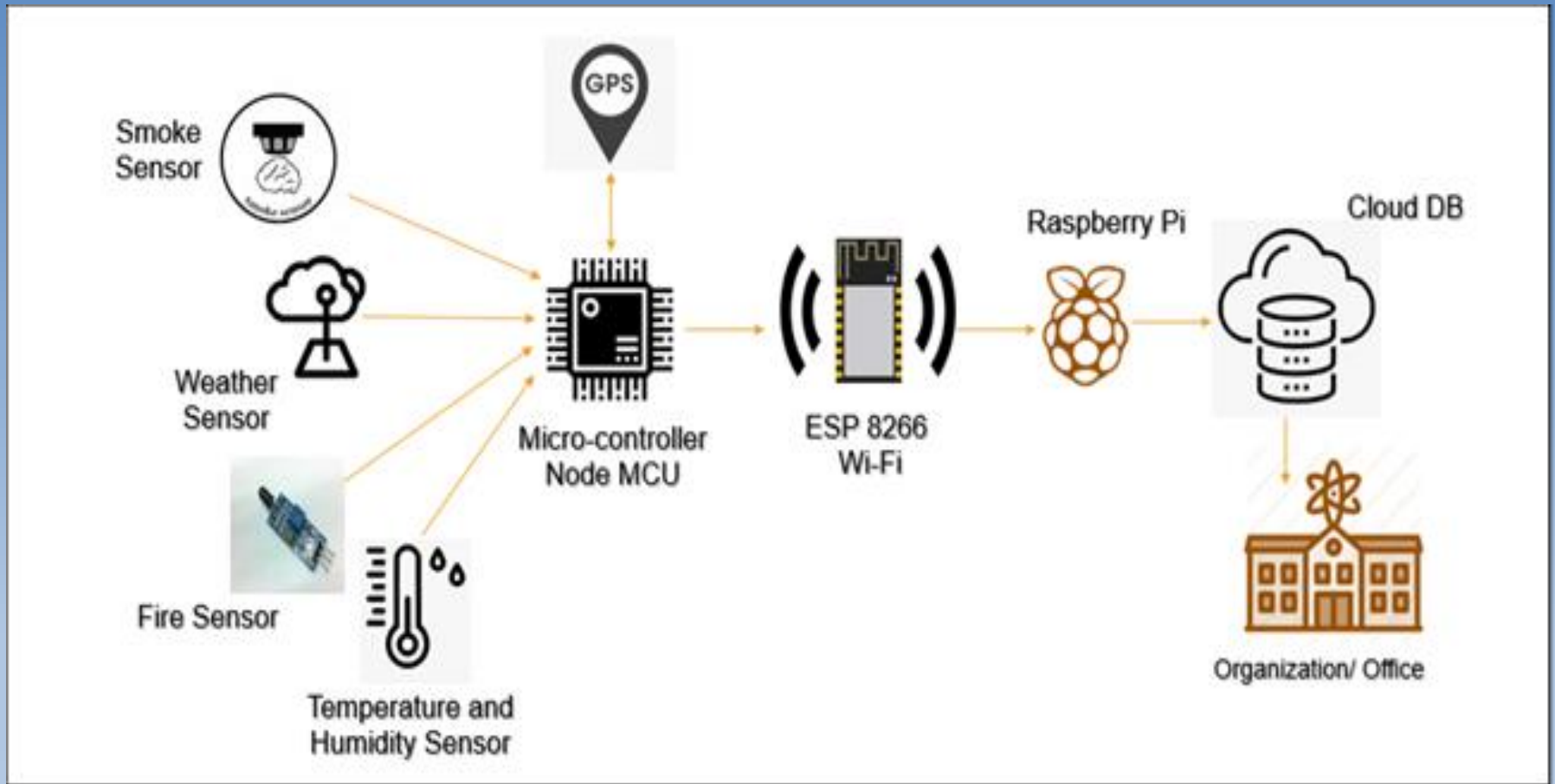
Stepping stone for monitoring and warning system

❑ The proposed system provides the monitoring and early warning for forest fire hotspot areas in our country. The general steps of the system are as follows:

➢ Step1: It is performing data collection from sensors.

➢ Step 2: Wireless node connect with relevant sensors. Sensor data wirelessly send to the server through raspberry pi.

➢ Step 3: Sensors data received by micro-controller and transmitted to the raspberry pi via MQTT protocol.

➢ Step 5: The raspberry pi received data and transmitted towards public cloud.

➢ Step 6: The system compares with the received sensor values and threshold value. It is decided for two conditions such that.

      if (Received sensor value > threshold)

         then (SMS to the rescue organization)

     else

        No warning.

➢ Step 7: The system displays the relevant signal and send message to rescue organization.

Result and Discussion

❑ Climate change is one of the major threats to cause the forest fire hotspots in Myanmar. The environment caused air pollution by forest fire hotspots.

❑ Therefore, whether due to natural disasters or man-made, for these events, it is necessary to have a forest fire hotspots monitoring and warning system that helps reduce air pollution. There is a need to be informed in advance of possible forest fire hotspots regions to minimize the effects of disasters.

❑ To inform rescue organizations with rapid speed of information, the system is need to monitor the situation that may cause a fire before occurrence of forest fire hotspots.

❑ All sensors collect the monitoring parameters such as temperature, smoke, humidity, wind direction, speed of the wind. If the sensor values exceed threshold value, then the system will show the alert sign and send information related to the forest fire hotspots towards the rescue organization.

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Conclusion

❑ Using Technology : Wireless Sensor Network

❑ Solving : Forest Fire Hotspot areas

❑ Informing : SMS alert

❑ Knowledge : Efficient knowledge of the natural disaster

❑ Effectives :
  - Disaster information knows timely,
  - reduce the air pollution