

NCP - IoT-Enabled Snow Avalanche Monitoring and Early Warning System

Abstract:

Avalanches pose significant threats to both human lives and infrastructure in mountainous regions. To mitigate the risks associated with avalanches, developing an effective early warning system is crucial. This project proposal aims to outline the development and implementation of an integrated system that combines early warning technology in avalanche-prone areas. Developing effective equipment for early warning systems for avalanches requires a multidisciplinary approach involving expertise in meteorology, snow science, and electronics. The proposal foundation includes analyzing critical parameters, selecting sensors, and enabling real-time data collection and transmission through IoT technology. The project aims to develop a complete warning system at the early stage of the avalanche. A network of multiple sensors like velocity, distance, water level, ultrasonic, and motion sensors will be used to collect ground information, and data will be transmitted to the base station, where data processing will be done. Processing will enable the system to detect and predict avalanche events, thus providing valuable lead time for safety measures and risk mitigation. One avalanche site in Uttarakhand will be selected to installation and demonstration of developed early warning and monitoring system.