PYRO SHIELD

TEAM : BLAZE BUSTERS

Pyro Shield - An Innovative Forest Fire Detection and Prevention System that uses predictive analytics based on the natural characteristics of the forest. Forest fires pose a significant threat to ecosystems, wildlife, and human settlements. Despite existing solutions, forest fires remain a persistent problem. Pyro Shield aims to develop an effective forest fire detection system. Pyro Shield utilizes smoke sensors to detect CO_2 levels and smoke particles, flame sensors to detect surrounding flames, humidity sensors to monitor atmospheric conditions. These sensors detect potential fires and predict high-risk situations by analyzing historical forest fire data, alerting us beforehand whenever there's a potential cause of fire. Our system employs a Lora network, which utilizes a hybrid method, with devices placed in concentric, layer-by-layer formation, ensuring optimal network coverage and connectivity. When a fire is detected, devices trigger one another, activating an alarm system. Outer region devices with Lora gateways ensures reliable communication through servers, facilitating seamless data transfer even in dense forests. Each layer of the network is equipped with GPS modules and alarm system, alerting people in the surrounding forest area. 'Save the Forest' is not just our motto - it's our mission. That's why we've chosen solar cells and sodium-ion batteries, ensuring our system minimizes carbon footprint and protects forest from fire and toxic waste. This innovative combination delivers a reliable, eco-friendly energy solution while significantly reducing the risk of battery fires and explosions, ensuring safer operations and protecting our precious ecosystem. Key benefits of Pyro Shield include several advantages over existing solutions like early detection through advanced sensors, reliable communication through Lora network and sustainable power with solar cells and sodium-ion batteries . In conclusion, Pyro Shield offers an effective and eco-friendly solution for early forest fire detection and prevention, leveraging advanced sensors and predictive analytics to safeguard our forests.