Emerging Methods for Early Detection of forest fires

Domain Name : Artificial Intelligence

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Problem Statement:

Forest fires are occurring throughout the year with an increasing intensity in the summer and autumn periods. These events are mainly caused by the actions of humans, but different nature and environmental phenomena, like lightning strikes or spontaneous combustion of dried leafs or sawdust, can also be credited for their occurrence. Regardless of the reasons for the ignition of the forest fires, they usually cause devastating damage to both nature and humans. Forest fires are also considered as a main contributor to the air pollution, due to the fact that during every fire huge amounts of gases and particle mater are released in the atmosphere. To fight forest fires, different solutions were employed throughout the years. They ware primary aimed at the early detection of the fires.

PROPOSED SOLUTION :

1. FIRE AND SMOKE DETECTION FROM SUN- SYNCHRONOUS SATELLITES -

Imaging sensors in sun-synchronous satellites include three multispectral imaging sensors,

namely advanced very-high-resolution radiometer moderate resolution imaging spectroradiometer and visible infrared imaging radiometer suite whose data have also been used for wildfire detection. The advanced very- high-resolution radiometer is a multipurpose imaging instrument that measures the reflectance of the Earth and has been used for global monitoring of cloud cover, sea surface temperature, ice,

snow, and vegetation cover characteristics .

1. FIRE AND SMOKE DETECTION FROM

GEOSTATTIONARY SATELLITES -

Regarding satellite imagery from geostationary satellites, important work for fire and smoke detection has already been performed using the advanced Himawari imager sensor of the Himawari-8 weather satellite. Himawari-8 is a new generation of Japanese geostationary weather satellites operated by the Japan Meteorological Agency. AHI-8 has significantly higher radiometric,spectral,and spatial resolution than its predecessor.

1. EFFECTIVELY MANAGING THREATS TO A FOREST'S HEALTH -

With proper application of forest herbicides, private forest landowners can promote the growth of their young trees by controlling wild vegetation that competes for growing space above and below ground, and by enriching soils with fertilizers. Strict requirements on herbicides use has Washington foresters taking the necessary steps to achieve their benefits without risking water and soil quality, the habitat of the fish and wildlife, and the human lives that live and work around our private forests. The forestry practices of WFPA’s members have been developed through years of science-based research, adaptive management, and collaboration.