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| **Developing a Forest Fire Diagnostic Model Utilizing Satellite Imagery** |
| Forest fires exert a significant impact on Earth's ecological systems, resulting in consequences such as deforestation, habitat degradation, and adverse effects on environmental, economic, and social domains. The restoration of areas affected by forest fires demands substantial time and effort to return them to their original state. Proactive identification of areas prone to forest fires is crucial for minimizing the damage caused by such incidents.  In this study, a forest fire diagnostic model was developed to enhance the precision of forest fire risk predictions. The model utilized remote sensing data and human activity maps. To gauge the dryness of the land surface, the Vegetation Temperature Condition Index (VTCI) was employed, and density maps of roads, buildings, and cropland were incorporated for the human activity maps. The algorithm of the model was based on the Random Forest classifier, and it was trained on forest fire occurrence data from 2016 to 2020 across South Korea.  To assess the actual performance of forest fire forecasting, short-term forecasts for a 3-day period were conducted from February to May 2023. The model successfully predicted 80% of forest fires during this evaluation period. |