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Project Proposal

Proposal

Predict the Burned Area of Forest Fires based on Meteorological and Environmental Data from Northeastern Portugal

Introduction

With the recent severity of wildfires in California, our group aims to develop a model to help predict and understand how wildfires spread in areas of high risk. Understanding how multiple variables influence the spread of fire in different areas that could be crucial to help prevent large fires in California in the future. This project aims to investigate the relationship between meteorological variables and burned area in the Montesinho Natural Park in northeastern Portugal as a potential reference to California.

Objective

With a dataset compiled by Cortez and Morais in 2007 of 517 independent fire events, each observation represents a distinct fire occurrence, which would allow us to run a multiple linear regression on the dataset. The goal of the project would be to develop a model that could predict forest area burned simply on the continuous meteorological variables provided in the study. In particular, the analysis would focus on temperature, relative humidity, wind speed, rainfall, and other fire related indices (fine fuel moisture code, drought code, etc.).

Expected Findings

It would be expected that larger burned areas occur under higher temperatures, stronger, winds, and minimal rainfall based on qualitative reasoning. Additionally, indices already used to predict fire severity (such as FFMC and ISI) are expected to have high predicting power in burned area.

Reference

Cortez, P., & Morais, A. J. R. (2007). A data mining approach to predict forest fires using meteorological data. In New Trends in Artificial Intelligence, Proceedings of the 13th EPIA Conference on Artificial Intelligence, 512–523.