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Application of feature construction techniques in forest fire duration prediction data

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Abstract: Forest fires pose a major threat to both human and animal life, with significant economic and social impacts. A reliable prediction system is crucial for mitigating these effects, especially during summer months, dry seasons, and in high-risk areas such as the Mediterranean. This study explores feature construction and selection methods applied to forest fire data collected over 10 years in Greece, incorporating prevailing weather conditions at ignition and during suppression. By applying techniques like Principal Component Analysis (PCA), Minimum Redundancy Maximum Relevance (MRMR) feature selection, and Grammatical Evolution for feature construction, this research aims to identify key factors influencing fire duration.

Keywords: Forest fires; Machine learning; Neural networks; Feature Construction; Genetic Programming; Grammatical Evolution

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