

# OFFICIAL ABSTRACT and CERTIFICATION

## Wildfire Prediction and Reduction for the West Coast of the USA Using a Neural Network Approach

SShamtej Singh Rana

Commack High School, Commack, NY, USA

In the first ten months of 2019, on the west coast of the United States, more than 40,000 wildfires burned about 3.2 million acres of forest, costing over \$900 million in damages, in addition to 44 known deaths and 170,000 evacuations. In recent years, a surge in wildfire cases lead to the research of better methods of forecasting wildfire climate. In this study, a neural network was developed, and climate data was input to a neural network to determine the current and future wildfire danger. A Feed Forward Neural Network (FFNN) for classification tasks was incrementally trained to make predictions of future fire weather. FFNN outputs were used to predict effective fire prevention solutions. The system was trained and tested using open source climate data from 2018-2019, and forest images from google.com. The FFNN uses temperature (°C), relative humidity (%), total precipitation (mm), wind speed/direction (mph), mean sea level pressure (kPa) and shortwave radiation (sfc). The classification network performs at an accuracy of 0.963, representative of high classification strength and dependability on Neural Network predictions to discern between safe, warning, and fire conditions. The cost is less than 5% of the losses of California, making the system cost efficient.

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