<!DOCTYPE html>

<html>

<head>

<title></title>

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<body style="color: rgb(0, 0, 0); background-color: rgb(255, 255, 255);">

<h1><span style='font-size: 16px; line-height: 107%; font-family: "Times New Roman", serif; text-shadow: rgba(136, 136, 136, 0) 3px 3px 2px;'>A novel hyrid deep learning model for predicting spread of wildfire&nbsp;</span></h1>

<p><span style="font-family: 'Times New Roman', Times, serif;">The use of deep learning for predicting wildfire spread began in 2006, when researchers at Stanford University developed a system that could predict the movement of a fire based on its location, size, and wind speed. Since then, research into this area has continued apace, with new advances being made all the time. In particular, recent work has focused on using machine learning techniques to improve predictions about how fires will behave under different conditions.</span></p>

<p style='margin-top:0in;margin-right:0in;margin-bottom:8.0pt;margin-left:0in;line-height:107%;font-size:15px;font-family:"Calibri",sans-serif;text-align:justify;'><span style='font-size: 16px; line-height: 107%; font-family: "Times New Roman", Times, serif;'>In this study, a hybrid deep learning model was developed based on real fire data and meteorological factors to predict wildfire spreading. We implemented a fully connected convolutional neural network long short term memory (FC-CNN-LSTM) model to predict the forest fire spread in the coming days by using an appropriate cost function. The FC-CNN-LSTM model was trained by using a set of related variables, including climate data, daily fire data, landcover data and topographic data.</span><span style="font-family: 'Times New Roman', Times, serif;">&nbsp;</span></p>

<p style="margin: 0in 0in 8pt; line-height: 107%; font-size: 15px; font-family: Calibri, sans-serif; text-align: center;"><span style="font-family: 'Times New Roman', Times, serif;">&nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; AKS1 &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp;</span></p>

<p style='margin-top:0in;margin-right:0in;margin-bottom:8.0pt;margin-left:0in;line-height:107%;font-size:15px;font-family:"Calibri",sans-serif;text-align:justify;'><span style='font-size: 16px; line-height: 107%; font-family: "Times New Roman", Times, serif;'>Our proposed model compared to other deep learning models such as fully connected convolutional recurrent neural network (FCCRNN),&nbsp;neural&nbsp;network(NN), recurrent neural network(RNN),&nbsp;has higher accuracy, F1 score, precision and recall in predicting fire spread. According to our results deciduous shrubland can significantly Influence a fire&apos;s spread. To determine the effects of a variable on fire spread, correlation analysis is used. Almost in most days of the fire, meteorological variables are inversely related to fire activity. Topographic factors often play a positive role in the spread of fire days and the intensity effect has increased with passing time.</span></p>

<p style="margin: 0in 0in 8pt; line-height: 107%; font-size: 15px; font-family: Calibri, sans-serif; text-align: center;"><span style="font-family: 'Times New Roman', Times, serif;">AKS2 &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp;AKS3</span></p>

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