EMERGING METHODS FOR EARLY DETECTION OF FOREST FIRES

FUNCTIONAL FEATURES

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Python:

Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Python is dynamically-typed and garbage-collected. It supports multiple programming paradigms, including structured, object-oriented and functional programming.

CNN:

A Convolutional Neural Network, also known as CNN or ConvNet, is a class of neural networks that specializes in processing data that has a grid-like topology, such as an image. A digital image is a binary representation of visual data. It contains a series of pixels arranged in a grid-like fashion that contains pixel values to denote how bright and what color each pixel should be.

The human brain processes a huge amount of information the second we see an image. Each neuron works in its own receptive field and is connected to other neurons in a way that they cover the entire visual field. Just as each neuron responds to stimuli only in the restricted region of the visual field called the receptive field in the biological vision system, each neuron in a CNN processes data only in its receptive field as well. The layers are arranged in such a way so that they detect simpler patterns first (lines, curves, etc.) and more complex patterns (faces, objects, etc.) further along. By using a CNN, one can enable sight to computers.

IBM Cloud:

IBM Cloud **provides solutions that enable higher levels of compliance, security, and management**, with proven architecture patterns and methods for rapid delivery for running mission-critical workloads. The IBM Cloud platform combines platform as a service (PaaS) with infrastructure as a service (IaaS) to provide an integrated experience. The platform scales and supports both small development teams and organizations, and large enterprise businesses. Globally deployed across data centers around the world, the solution you build on IBM Cloud® spins up fast and performs reliably in a tested and supported environment you can trust!

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delivery for running mission-critical workloads. Available in data centers worldwide, with multizone regions in North and South America, Europe, Asia, and Australia, you are enabled to deploy locally with global scalability.

IBM Cloud offers the most open and secure public cloud for business with a next-generation hybrid cloud platform, advanced data and AI capabilities, and deep enterprise expertise across 20 industries. Solutions are available depending on your needs for working in the public cloud, on-premises, or a combination:

- With public cloud, the resources are made available to you over the public internet. It is a multi-tenant environment, and resources like hardware and infrastructure are managed by IBM.

- A hybrid cloud solution is a combination of public and private, giving you the flexibility to move workloads between the two based on your business and technological needs. IBM uses Red Hat OpenShift on IBM Cloud, the market-leading hybrid cloud container platform for hybrid solutions that enables you to build once and deploy anywhere. With IBM Cloud Satellite, you can create a hybrid environment that brings the scalability and on-demand flexibility of public cloud services to the applications and data that runs in your secure private cloud.

- Support for multicloud and hybrid multicloud solutions is also available, which makes it easy for you to work with different vendors. IBM

Cloud Paks are software products for hybrid clouds that enable you to develop apps once and deploy them anywhere.

- Virtual Private Cloud (VPC) is available as a public cloud service that lets you establish your own private cloud-like computing environment on shared public cloud infrastructure. With VPC, enterprises can define and control a virtual network that is logically isolated from all other public cloud tenants, creating a private, secure place on the public cloud.

IBM Watson Studio:

Watson Studio, formerly Data Science Experience or DSX, is IBM's software platform for data science. The platform consists of a workspace that includes multiple collaboration and open-source tools for use in data science.[1]

In Watson Studio, a data scientist can create a project with a group of collaborators, all having access to various analytics models and using various languages (R/Python/Scala). Watson Studio brings together staple open source tools including RStudio, Spark and Python in an integrated environment, along with additional tools such as a managed Spark service and data shaping facilities, in a secure and governed environment.

Watson Studio provides access to data sets that are available through Watson Data Platform, on-premises or on the cloud. The platform also has a large community and embedded resources such as articles on the latest

developments from the data science world and public data sets. The platform is available in on-premises, cloud, and desktop forms.

Open CV:

OpenCV is a library of programming functions mainly aimed at real-time computer vision. Originally developed by Intel, it was later supported by Willow Garage then Itseez. The library is cross-platform and free for use under the open-source Apache 2 License.

Deep Learning:

Deep learning is a subset of machine learning, which is essentially a neural network with three or more layers. These neural networks attempt to simulate the behavior of the human brain—albeit far from matching its ability—allowing it to "learn" from large amounts of data. While a neural network with a single layer can still make approximate predictions, additional hidden layers can help to optimize and refine for accuracy.

Deep learning drives many artificial intelligence (AI) applications and services that improve automation, performing analytical and physical tasks without human intervention. Deep learning technology lies behind everyday products and services (such as digital assistants, voice-enabled TV remotes, and credit card fraud detection) as well as emerging technologies (such as self-driving cars).

Python-Flask:

Flask is a micro web framework written in Python. It is classified as a microframework because it does not require particular tools or libraries. It has no database abstraction layer, form validation, or any other components where pre-existing third-party libraries provide common functions.