**Some definitions about IA en foco:**

The challenge:

Our challenge is to develop an app that predicts fire behavior in Wildfire situations, bringing useful information for fast and effective development of mitigation tactics.

Taking advantage of pre-compiled data about climate conditions, grounds conditions, vegetation and topology as an input of the model, because for so many years, this data was being gathered in repositories but is not being used properly as a tool for this problem.

This challenge has his roots on the relevance it has to human life, preservation of natural resources and motivation in the search of ideas and innovative applications that facilitate the task of the agencies in charge of such a catastrophe.

The motivation:

As a group of humans who value life and preservation of our planet, we feel the need to do something about the WildFires, putting up to service our capacity and technical knowledge to avoid mass destruction of the world wide natural resources.

Some facts:

This is an excerpt from a local news:

“... Sierras-Chicas (a local mountain range) was the most affected zone, with a 38% of burned area, in this time 5358 fires were registered, a lot of them reaching the same lands again”.

What caught our attention was, after obtaining the numbers, we overlap satelital images with a cartographic record of the fire, and we detect the burned areas.

“The year with more quantity of wildfires was 2003, with a total of 364, attacking 102.992 ha.

However, the record of most damaged areas was in 2013, with 106.206 ha, only by 153 sources of fire.”

"The areas that were burned the most in the period studied are relatively small and close to urban areas; the largest have intermediate frequencies and are further away from areas of continuity of vegetation."

As a result and being a human group that loves nature and the beautiful place where we live, this challenge is particularly attractive to us, due to the enormous opportunity to apply technology to contribute to the solution of such an important problem, and the irrepressible desire to participate and collaborate in taking care of what we love.

Objectives:

The main objective of this project is to grow the effectiveness of fire mitigation, giving tactical data to the organizations who fight the Wildfires.

Additionally, another objective will be to count with intelligent data about current events to help fire fighting services in the future.

Our Philosophy:

Our philosophy focuses on helping authorities and firefighters, providing information to keep our land (and hopefully the entire world) out of danger in wildfires. We see enormous potential in the use of distributed information gathering on the development of wildfires and general circumstances in emergency events that could help authorities make tactical decisions to save lives, soil, flora, fauna and material resources. In essence, we hope to do what is necessary to foster cooperation and improve human well-being.

General vision of our project construction:

Graphical Interface for fire departments.

Firefighters establishments need information that allows them to tactically organize their available human resources, tools and joint efforts in order to be as accurate as possible in order to quell the voracity of any fire.

We want to collaborate with them. Due to this, we see important factors of the application such as forest fires, wind direction, soil humidity according to the season and topographic situation, type of vegetation, atmospheric pressure, probability of rainfall among many, which we propose to integrate in a single model capable of predicting with a high degree of certainty the speed and direction of the fire's advance; from a few minutes to several hours in the future, allowing the development of the tactical actions necessary to mitigate the loss. Therefore, we propose the creation of our interface for the authorities and fire departments that serves to give a persistent flow of information in a more modern and efficient way. Furthermore, the interface integrates our machine learning models that can arm these actors with more knowledge.

The application

Our team addressed this problem by designing a multipurpose application. In addition, machine learning was used to predict the spread of an existing fire, based on reliable files available in different cloud repositories. Our model will be trained with historical data on: topographic information, wind levels, humidity, atmospheric pressure and weather forecasts to take into account all possible fire growth factors and predict its behavior, and collaborate with the necessary tactical decisions to its rapid containment.

The purpose of this application is to show the current state of fire conditions, predicting the behavior of the fire in advance, from the moment of consultation to 7 days in the future, generating a dynamic map of the fire and its behavior.

It relies on a simple and minimalist user interface to suit users of all ages.

List of preliminary resources:

* NASA set images with wildfire data
* Machine learning algorithms (Libraries of Python, R, and other languages)
* Public information data (Api's from Open Weather, Windfinder, Google Earth, etc)

Our Git Repository: https://github.com/kruzbayonas/IAenfoco