



MOBILE APPLICATION TO RECOGNIZE ARACHNIDS BITES, AN APPROACH BASED ON AMBIENT INTELLIGENCE



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What is Ambient Intelligence

The Ambient Intelligence (AmI), it is a multidisciplinary approach [1].

It aims to improve the way in which environments and people interact with each other naturally.

It allows many areas of research to have an important beneficial influence is society.

Uses of AmI



- Home automation.

- Medical applications .

- Environmental applications

Uses of AmI

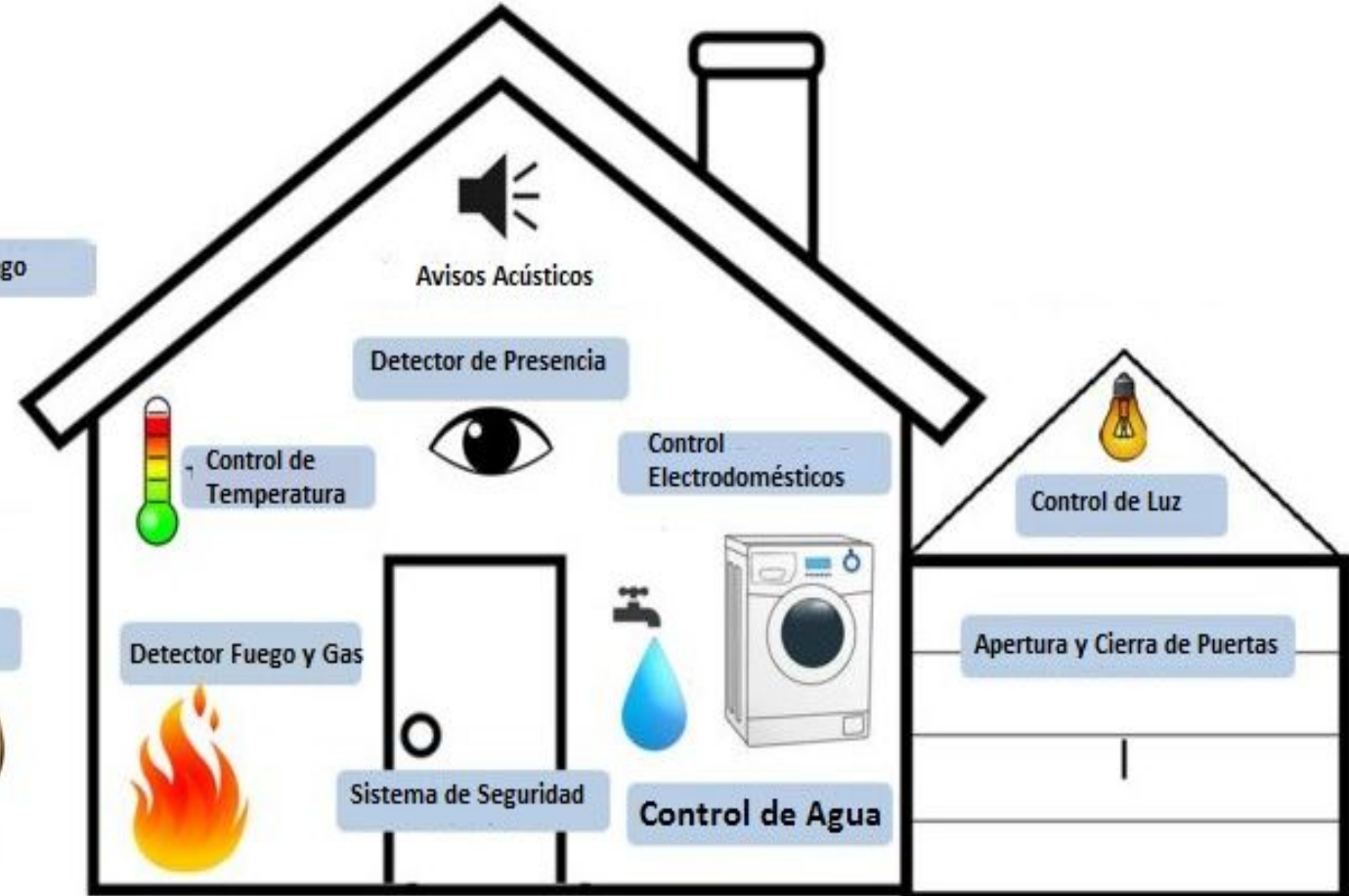


Notificador de Correo



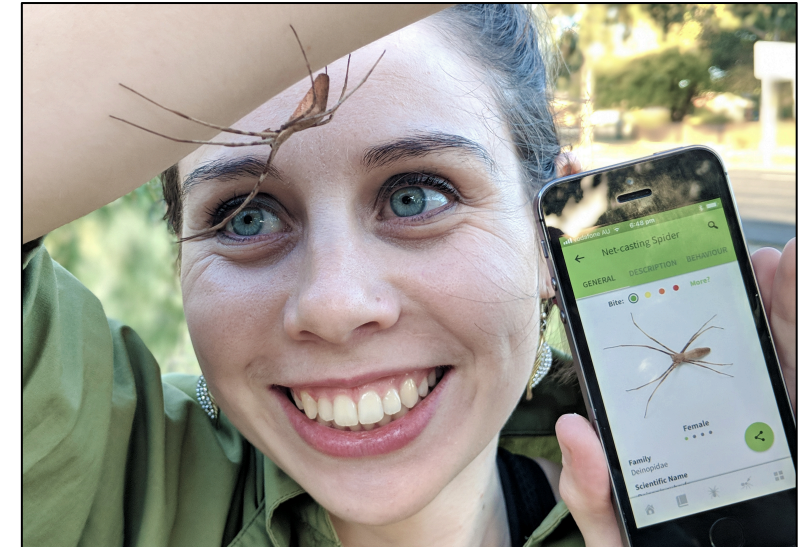
Control del Riego

Control de Mascotas



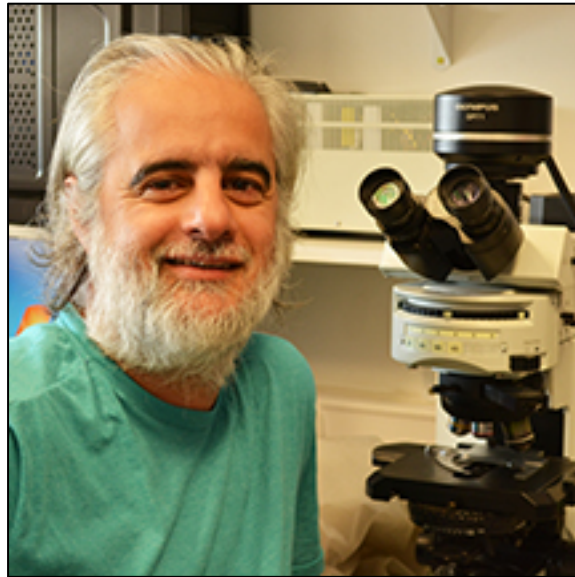
Background

- There is an application called "Spidentify" from Australia [8].
- The application identifies 250 types of arachnids. This tool identifies detailed information about each spider, including an instantly accessible bite hazard classification.



Mobile app developed by
Minibeast Wildlife.

- An application called “Is it spider or scorpion?” [9].
- CEPAVE, a digital system created to allow users to take pictures with their mobile devices and identify the different species of arachnids and scorpions
- This tool was created in Argentina.



Mobile app developed by
Nicolás Mattone.



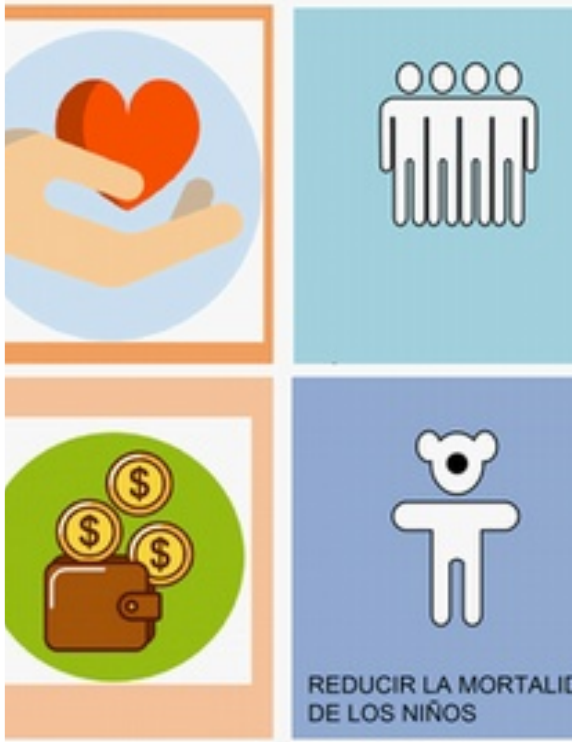
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Main Problem



In various regions of the world, the bite of a spider is severe, especially in children. This problem can produce in some cases, benign symptoms where they do not require medical treatment, although usually present complications due to scratching and thereby cause a superinfection in the lesion.

Main Problem

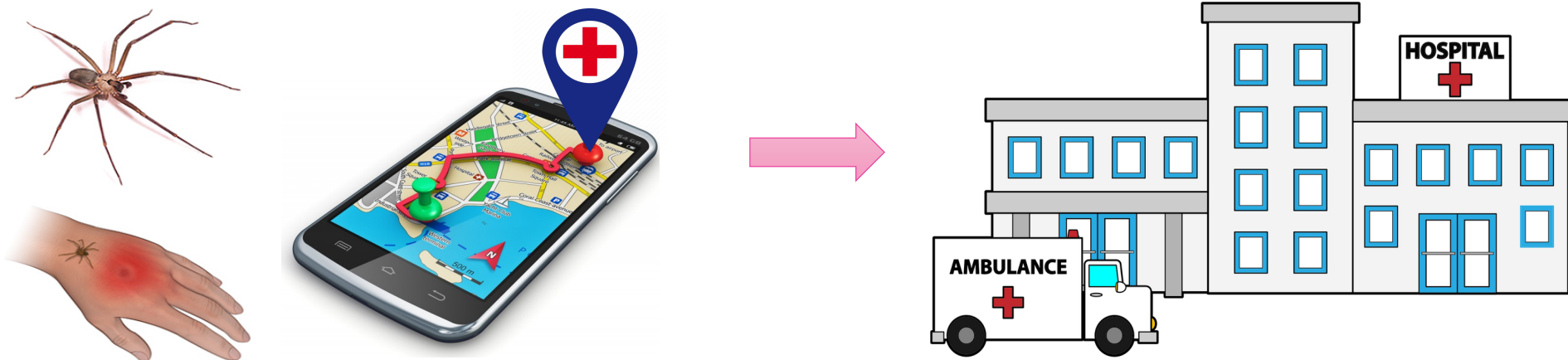


These accidents require treatments to prevent death, amputations or permanent sequelae. Likewise, the impact of sequels and deaths represents a high burden on health, society and economy.

Main Problem

The objective is that with Aml, telemetry be allowed to support in a remote diagnosis people who suffer from the bite of an arachnid, generating recommendations, through a mobile application, connected to a specialty center.

Spider bites are analyzed with a medical database.



Main problem

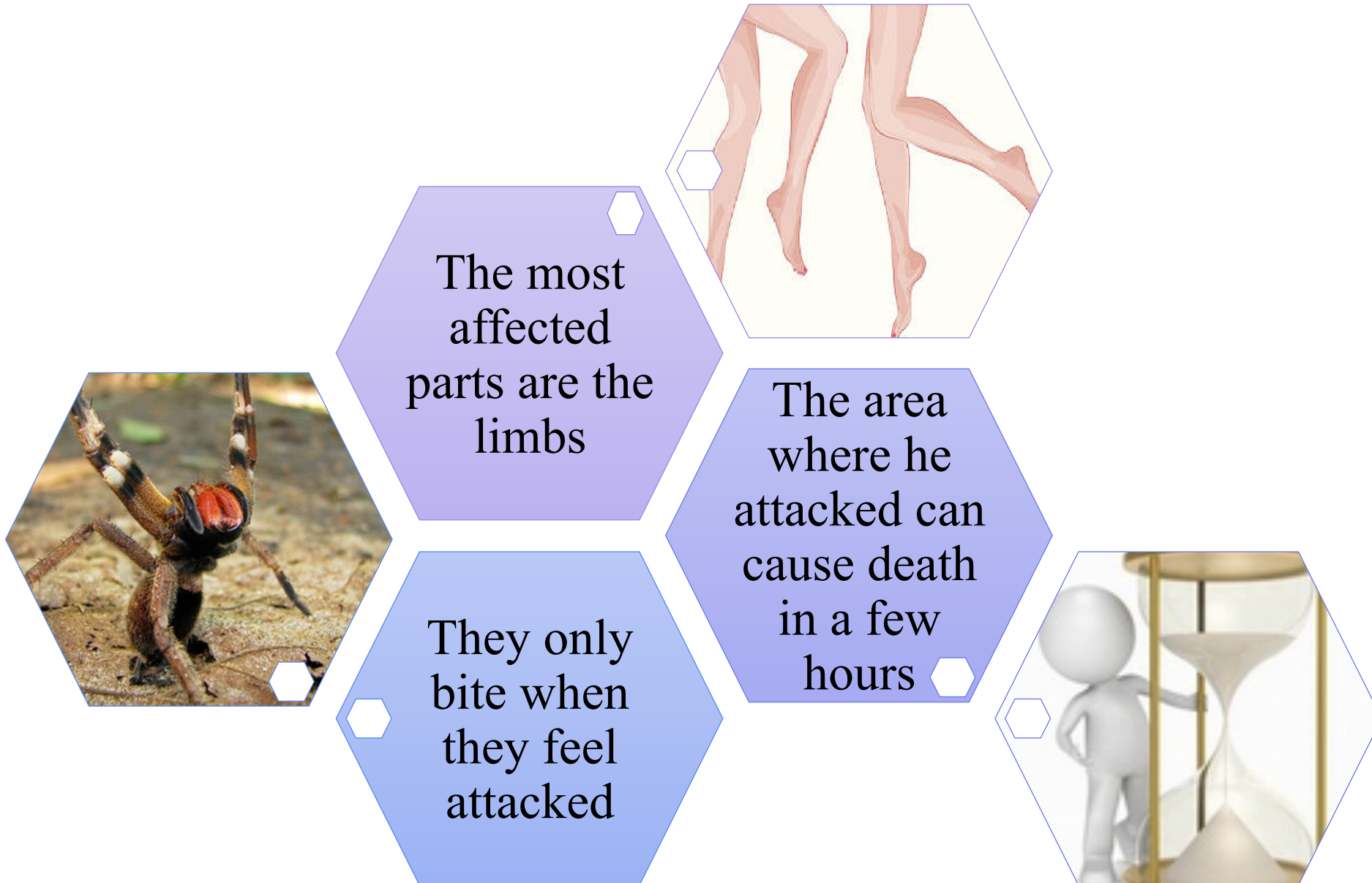


It is impossible to know what type of spider the aggressor has been, at the moment when it bites.



Identification of the place to be used, that is, a specially center where they attend this type of emergency.

When do arachnids attack





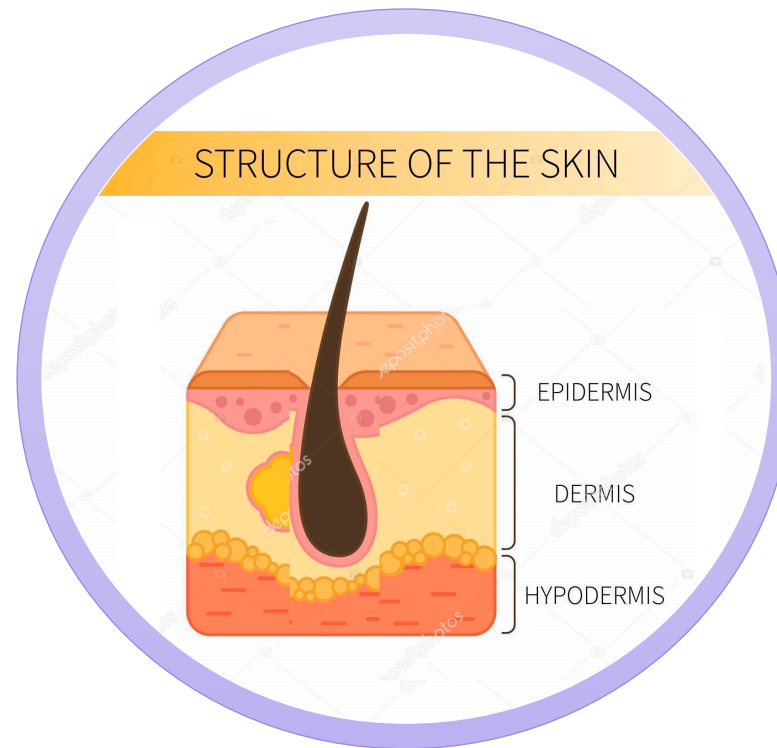
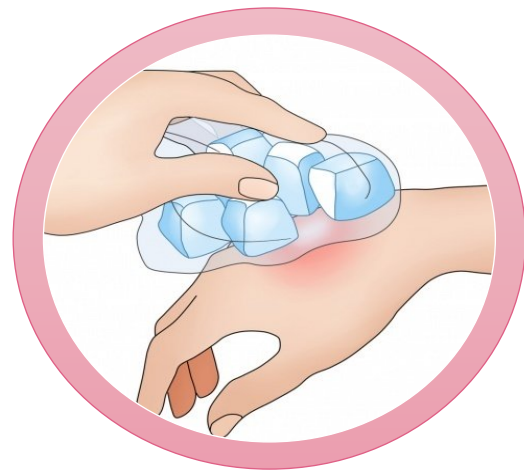
In Mexico, the most susceptible to more severe damage from spider venom are children [5].

If the spider has just moved, eaten or mated, it will have a greater effect if one suffers from a disease or has low defenses [4].



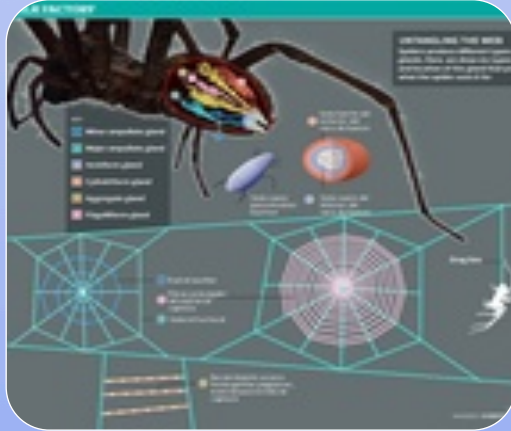
What to do if a spider bites you?

1.- Ice must be applied to the affected area and go to an urgent care center [5].

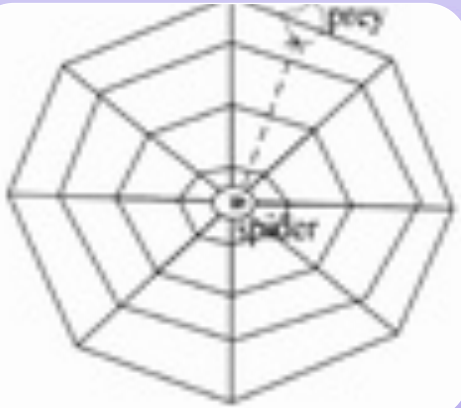


2.- Be careful with the antiloxoscélico serum or antidote. In most cases, the injected venom is fixed and acts in the epidermis or enters the bloodstream and will produce a decrease in red blood cells, a situation in which serum is not useful [7].

Spider web



In nature, the spider is based on the large web for the life of its prey [10].



It consists mainly of three parts; the central point, the radius and the spiral silk thread [10].



a) Dangerous spider webs:



b) Non-dangerous spider webs:

Methodology

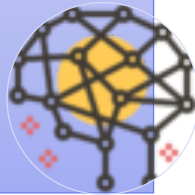
- Filtering and delimitation of regions of interest.

Collection
and pre-
processing



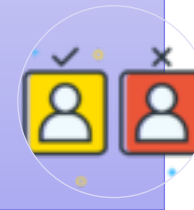
- Identify regions of arachnid bites.

Segmentation



- Get the most relevant features.

Feature
Extraction



- Sort the types of bites.

Classification



Future work

- The incorporation of the missing species into the system is intended.
- In addition, it is implemented to detect various types of bites and not just spiders.

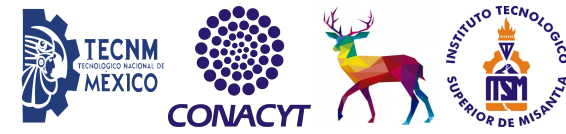


Conclusion

- The most valuable contribution of this project is related to an intelligent system capable of identifying spider bites in children from environmental intelligence. Using a large number of images of the types of arachnids, as well as their spider webs that weave.

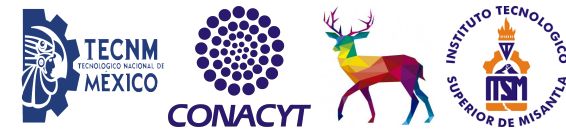


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Thank you!

Get in touch with us

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