Survey for References for the Article

Bruno Lima

Base work for reference is in **RED**

5 Most related works are in YELLOW

- (2016) Image Analysis for Identifying Mosquito Breeding Grounds

Presents a automated technique using pipeline of binary classifiers that is resilient to picture quality, lighting and scene color mixtures. The system detects whether or not each the image has a puddle. The system also uses boosting, being able to achieve about 90% of accuracy with images taken with different kinds of cameras.

http://ieeexplore.ieee.org/document/7746808/

- (2017) Mosquito larva classification method based on convolutional neural networks

An effective method to counter-measure the Aedes mosquitos is to know its life cycle and apply efficient actions to interrupt it. The Aedes mosquito has four phases in its life cycle: egg, larva, pupa and mosquito. The first three phases are categorized as aquatic phases.

In this paper we propose a novel method based on convolutional neural networks, where a dataset of larva is used in training in order that the machine learns two types of mosquitos, genus Aedes and “others” genera. We propose an efficient method to identify larva of Aedes mosquitos using convolutional neural networks (CNN) applied to the larva's images captured by mobile devices.

Because the identification of the Aedes mosquito larvae is carried out in the moment that the larvae are collected, the fumigation process will be more accurate and thus the infection rates would be decreased.

http://ieeexplore.ieee.org/document/7891835/

- (2017) Identifying Mosquito Breeding Sites via Drone Images

Public Health Inspectors (PHIs) face a problem of identifying certain mosquito breeding sites since they cannot easily reach places such as roof gutters, overhead water tanks, inaccessible rooftops and cement materials which are capable of retaining water. The proposed approach processes images captured from a drone to identify possible sites where stagnant water may retain and highlights if such areas are apparent within the image.

https://dl.acm.org/citation.cfm?id=3086442&CFID=993428618&CFTOKEN=26839726

- (2015) Automated Microscopy and Machine Learning for Expert-Level Malaria Field Diagnosis

Due to its reliance on trained microscopists, field microscopy often suffers from poor sensitivity, specificity, and reproducibility. This project created a automated digital microscope that uses computer vision and classification algorithms (SVMs, CNNs) to check if a blood sample (0.1 uL) is infected with malaria in Thailand.

http://ieeexplore.ieee.org/document/7344002/

- (2014) MedizDroids Project: Ultra-low cost, low-altitude, affordable and sustainable UAV multicopter drones for mosquito vector control in malaria disease management

Research the use of drones for mosquito vector control and suppression. The strategic goal of the MedizDroids Project is to develop UAV (unmanned aerial vehicle) multicopter drones that can be used to automate key components of mosquito integrated vector control, in particular, indoor residual spraying (IRS), outdoor residual spraying (ORS), and larval source management via larviciding (LSM-LC).

http://ieeexplore.ieee.org/document/6970343/

- (2016) Multi-sensor data fusion for identifying malaria environmental features

L-band Synthetic aperture radar (SAR) imagery has the capability to penetrate dense vegetation covers in tropical areas and is sensible to the variation of soil moisture and water level, which could provide more detailed information about wetlands. The objective of this study is to identify the different LULC (land use/land cover) types related to malaria transmission combining optical and SAR data.

http://ieeexplore.ieee.org/document/7729653/

- (2015) Quadcopter-based stagnant water identification

The scientific challenge in identifying water is that it is specular in nature, and acts like a mirror. Water is like a chameleon changing its color depending on the environment, and there is no easy way of saying “this is water” based on its appearance. In this paper, we propose the use of an old paradigm of optical flow for the novel application to stagnant water detection

http://ieeexplore.ieee.org/document/7490049/

- (2015) The development of AEDESTROYER : A mobile robot that search and destroy potential breeding habitat for aedes

Gives a very good and concise introduction. Then proposes a project using LEGO to suck water from open open recipients on the floor.

http://ieeexplore.ieee.org/document/7451604/

- (2016) Machine vision automated species identification scaled towards production levels

In order to test the scalability of the automated insect identification enterprise, we used a sparse processing technique and support vector machine to test the largest dataset to date: 72 species of fruit flies (Diptera: Tephritidae)and 76 species of mosquitoes (Diptera: Culicidae).

https://www.researchgate.net/publication/282589935_Machine_vision_automated_species_identification_scaled_towards_production_levels

- (1996) Culex annulirostris breeding sites in urban areas: using remote sensing and digital image analysis to develop a rapid predictor of potential breeding areas.

A rapid technique is being developed and assessed to identify urban breeding sites of Culex annulirostris, which is a vector of an arbovirus (Ross River virus). Field survey and laboratory identification were used to identify breeding sites for the species. The sites were located on digitized images of 1: 30,000 color aerial photographs.

http://europepmc.org/abstract/med/8827612

- (2009) Combining Google Earth and GIS mapping technologies in a dengue surveillance system for developing countries

Satellite imagery of the town of Bluefields, Nicaragua captured from Google Earth was used to create a base-map in ArcGIS 9. Indices of larval infestation, locations of tire dumps, cemeteries, large areas of standing water, etc. that may act as larval development sites, and locations of the homes of dengue cases collected during routine epidemiologic surveying were overlaid onto this map.

https://link.springer.com/article/10.1186/1476-072X-8-49

- (2011) Aedes aegypti egg counting system.

A drawback on monitoring methods of dengue vector is the counting process of mosquito eggs, information store and analysis. Here we present a new automated egg counting system for remote Aedes aegypti population survey, based on an optical scanning platform, a man-machine interface, and a software for mosquitoes eggs counting.

http://ieeexplore.ieee.org/document/6091679/

- (2009) A new algorithm for segmenting and counting Aedes aegypti eggs in ovitraps.

Ovitraps, special traps to collect mosquito eggs, are used to detect Aedes aegypti presence and to approximate the gauge of the adult mosquitoes population in the environment by counting the number of eggs laid in an trap. This counting is usually performed in a manual, visual and non-automatic form. This work proposes a new automatic method to automatically count the number of eggs in digital images of ovitraps based on image processing techniques (color systems exploration) and k-Means clustering algorithm.

http://ieeexplore.ieee.org/document/5333759/

- (2017) Learning to Count Mosquitoes for the Sterile Insect Technique

The Sterile Insect Technique (SIT) is a promising alternative to pesticides; however, effective SIT relies on minimal releases of female insects. This paper describes a multi-objective convolutional neural net to significantly streamline the process of counting male and female mosquitoes released from a SIT factory and provides a statistical basis for verifying strict contamination rate limits from these counts despite measurement noise.

https://dl.acm.org/citation.cfm?id=3098204

- (2008) Identification of key areas for Aedes aegypti control through geoprocessing in Nova Iguaçu, Rio de Janeiro State, Brazil

This study discusses the use of geoprocessing to identify key areas for Aedes aegypti control, based on the infestation index obtained in the Aedes aegypti Infestation Index Rapid Survey (LIRAa). The results were analyzed on two scales, neighborhoods and blocks, with the building infestation index assigned to the neighborhood polygons and the Breteau index to the blocks. Kernel estimation was used in the spatial pattern analysis. The Breteau index spatial distribution showed five areas with high and medium density of positive Ae. aegypti breeding sites, highlighting small block clusters with high larval density, strategic for vector control.

http://www.scielo.br/scielo.php?pid=S0102-311X2008000100007&script=sci_arttext

- (2014) Identification and eradication of mosquito breeding sites using wireless networking and electromechanical technologies

Developed a system for identification of mosquito breeding sites (stagnant pools) and removal of stagnant water through electromechanical pumping systems. The stagnant water areas are first identified and reported using a web portal or SMS text. Then a vehicle carrying a Global Positioning system (GPS) to the points of stagnant pools.

http://ieeexplore.ieee.org/document/6996114/

- (2017) VazaZika Project

Project coordinated by PUC Rio. Vaza Zika is an application that supports the combat to Dengue Fever, Chikungunya and Zika Fever collaboratively. In addition to presenting each one of the notifications individually, the Vaza Zika also presents concentration areas through a heat map.

http://vazadengue.inf.puc-rio.br/

- (2016) Vírus Zika no Brasil

Informative about the virus, its development, transmission, consequences and ways of prevention.

https://sistemas.mre.gov.br/kitweb/datafiles/Munique/pt-br/file/Fact_Sheet_Zika_Virus_Jan16.pdf

- (2017) CombateAedes

Informative about the different diseases transmitted by the mosquito Aedes Aegypti, its development and ways of prevention.

http://combateaedes.saude.gov.br/pt/tira-duvidas

- (2005) GUIDELINES TO SEARCHING FOR MOSQUITO BREEDING HABITATS (STAGNANT WATER) AND CONDUCTING LARVAL SURVEY

Contains descriptions about the potential sites for mosquitoes breeding, including the types of sites with stagnant water.

https://www.biomedcentral.com/content/supplementary/1475-2875-7-20-S2.pdf