Jyothi Engineering College

NAAC Accredited College with NBA Accredited Programmes*

Approved by AICTE & affiliated to APJ Abdul Kalam Technological University

A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR

JYOTHI HILLS, VETTIKATTIRI P.O, CHERUTHURUTHY, THRISSUR. PIN-679531 PH : +91- 4884-259000, 274423 FAX : 04884-274777

NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2016-2022. NBA accredited B.Tech Programme in Civil Engineering valid for the academic years 2019-2022.

Snakebite Identification & Detection With Snakebite Mark Using Machine Learning Approach

Department of CSE

Jyothi Engineering College

Thrissur

September 29, 2020

29/09/2020

GROUP NUMBER   : 23

GUIDE NAME   : Dr Aswathy S U

GROUP MEMBERS   : Saranya K (JEC17CS090)
          Mary Jose (JEC17CS064)
          Sijin K (JEC17CS096)
          Yashif V S (JEC17CS106)

NAME OF THE PROJECT : Snakebite Identification & Detection With
          Snakebite Mark Using Machine Learning
          Approach

Vision of the Department

- Creating eminent and ethical leaders in the domain of Computational Sciences through quality professional education with a focus on holistic learning and excellence.

Mission of the Department

- To create technically competent and ethically conscious graduates in the field of Computer Science and Engineering by encouraging holistic learning and excellence.

- To prepare students for careers in Industry, Academia and the Government.

- To instill Entrepreneurial Orientation and research motivation among the students of the department.

- To emerge as a leader in education in the region by encouraging teaching, learning, industry and societal connect.

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INTRODUCTION

- Snakes are one of the dangerous reptiles due to their venoms

- Snakebite envenoming needs urgent attention

- A great deal of damage occurs following the delay in medical services

- Estimates of 81,410 – 1,37,880 deaths and 4,00,000 cases of disability globally every year

- Misidentification can lead to inadequate treatment for the victim

- Currently, a syndromic approach is widely used but, this strategy has limitations

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OBJECTIVES

- Our idea is complement to current approach to snakebite envenoming, by anticipating clinical signs

- Identification of the snake is the most crucial part to perform anti-venom administration

- Even a doctor can be wrong in identifying snake bites

- To speed up the process of pin-pointing the species before being late

- Can also avoid the false alarming situations but, consultation should always be done

PROBLEM STATEMENT

"Identification and recognition of distinct snake bite at the earliest, resulting in anti-venom administration, which in turn narrows the mortality rate due to the envenomation"

AREA OF PROJECT

Artificial intelligence (AI) is the simulation of human intelligence processes by machines, especially computer systems

- Image Processing (the use of a digital computer to process digital images through an algorithm)

- Machine learning (an application of artificial intelligence)

SKILLS SET REQUIRED

HARDWARE SPECIFICATIONS

- RAM : 8GB RAM

- STORAGE : Small projects 20 GB SSD Free Space

- PROCESSOR : Intel Core i7 processor

    Intel Core i5 with Turbo Boost

SOFTWARE SPECIFICATIONS

- AI

    Python 3.8.5 or MATLAB 9.7

- App development

    Java 15

CONCLUSION

- It is possible to identify which snake has been bitten and give the appropriate treatment

- This app can bring new benefits in the field of health

BASE PAPER

1. Image processing for snake identification based on bite using local binary pattern and support vector machine method- *Yoga Widi Pamungkas, Adiwijaya Adiwijaya,Dody Qori Utama*

(https://www.researchgate.net/publication/333168691_Image_processing_for_snake_indentification_based_on_bite_using_Local_Binary_Pattern_and_Support_Vector_Machine_method)

Deep learning based Multi-Modal Image Processing By Saranya K

Different imaging modalities provide complementary information about what is visualized. Multi-modality medical imaging techniques have been increasingly applied in clinical practice and research studies. When 3D data sets are used, it can be difficult to align them without the use of algorithmic approaches that can account for differences in the pose or even in the anatomy visualized. These considerations may lead to a classification of image registration methods as 'rigid' or 'non-rigid', where there may be anatomical differences that cannot be brought into alignment by using one set of translations and rotations for the entire dataset. It is mostly taken into consideration for the task of tumor segmentation, performing image fusion within the network (i.e. fusing at convolutional or fully connected layers) is generally better than fusing images at the network output.

SEMINAR TOPIC-1

Base Paper

Zhe Guo , Xiang Li , Heng Huang, Ning Guo, Quanzheng Li ,
Deep Learning-based Image Segmentation on Multi-modal Medical Imaging,
https://ieeexplore.ieee.org/document/8599078

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SEMINAR TOPIC-2

HARRIS HAWKS OPTIMIZATION (HHO) Based Image Processing By Yashif V S

In image processing segmentation is the crucial phase, it simplifies the representation of an image and facilitates it's analysis. When we compare classic bi-level thresholding and multilevel thresholding ,multilevel thresholding method is the more efficient in segmenting digital mammograms and it uses higher number of intensities to represent different region of the image. Using the HHO algorithm and the minimum cross-entropy as a fitness function. HHO method as tested over a benchmark set of reference image with Berkeley segmentation database and with medical image of digital mammography for the effectiveness of the method. The proposed HHO-based solver is verified based on other comparable optimizers and two machine learning algorithms K-means and the Fuzzy IterAg. The result shows the efficient and reliable result interns of quality, consistency and accuracy as compared to other methods.

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SEMINAR TOPIC-2

Base Paper

Erick Rodríguez Esparzaa , Laura A. Zanella-Calzada , Diego Olivaa , Ali Asghar Heidari, Daniel Zaldivar , Marco Pérez-Cisneros , Loke Kok Foonge
An efficient Harris hawks-inspired image segmentation method
https://doi.org/10.1016/j.eswa.2020.113428

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SEMINAR TOPIC-3

Medical image processing By Sijin K

Imaging has become an essential component in many fields of medical and laboratory research and clinical practice. Biologists study cells and generate 3D confocal microscopy data sets, virologists generate 3D reconstructions of viruses from micrographs, radiologists identify and quantify tumors from MRI and CT scans, and neuroscientists detect regional metabolic brain activity from PET and functional MRI scans. Analysis of these diverse image types requires sophisticated computerized quantification and visualization tools. Until recently, 3D visualization of images and quantitative analysis could only be performed using expensive UNIX workstations and customized software. Today, much of the visualization and analysis can be performed on an inexpensive desktop computer equipped with the appropriate graphics hardware and software. This processing includes many types of techniques and operations such as image gaining, storage, presentation, and communication.

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SEMINAR TOPIC-3

<u>Base Paper</u>

<div align="center">

Dr. J. Thirumaran, S. Shylaja

Medical Image Processing-An Introduction

https://www.researchgate.net/publication/320921011

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SEMINAR TOPIC-4

<u>Convolutional neural networks(CNN) for image classification</u> By Mary Jose

Image representation for classification task used often feature extraction methods which have been proven to be effective for different visual recognition tasks. Most of the applied features need to be identified by an expert and then manually coded as per the data type and domain. This process is difficult and expensive in terms of expertise and time. As a solution, deep learning reduces the task of developing new feature extractor, by automating the phase of extracting and learning features. CNN are a category of Neural Networks that have proven very effective in areas such as image recognition and classification. CNNs are used for image classification and recognition because of its high accuracy. The CNN follows a hierarchical model which works on building a network, like a funnel, and finally gives out a fully connected layer where all the neurons are connected to each other and the output is processed. CNN have been successful in identifying faces, objects and traffic signs apart from powering vision in robots and self driving cars.

29/09/2020

SEMINAR TOPIC-4

<u>Base Paper</u>

Nadia Jmour ,Sehla Zayen , Afef Abdelkrim
Convolutional neural networks for image classification
https://ieeexplore.ieee.org/document/8379889

Thank You