Animal Detection Using Image Processing For Agri

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Abstract- *The interaction between wild animals and people and the resultant negative impact on people or their resources, or wild animals or their habitat is "Human–wildlife conflict". Increasing growth of human populations overlap with wildlife territory, creating reduction of resources.Due to conflict many forms of loss of life or injury to humans, animals both wild and domesticated, occurs in particular habitat. Invade of animals in the farmland cause great loss to farmers and also to the animal. The main aim of our project is to reduce the loss and conflict between man and animal. The project uses image processing technique and embedded system .image processing technique is done using matlab which uses expectation maximization for segmentation, statistical and glcm for feature extraction and classification is done using ANN. classification is for finding empty land and presence of animal in the land. When the animal invade the agricultural land image is recorded and processed according to it result is serially sent to the controller broad from the control board a notification message is sent to the farmer regarding the entry of the animal in the farm land, buzzer sound and mild electric current is passed to the fence so that the animal will not come to the land and also land owner will take proper action for the animal to returning to the forest.*

I. LITERATURE SURVEY

Animal monitoring in the wild should be done without disturbing them is only possible by using camera trapping framework, which is a technique to study wildlife using automatically triggered cameras and produces great volumes of data. However, camera trapping collects images often result in low image quality and includes a lot of false positives (images without animals), which must be detection before the post processing step. This paper presents a new innovated two-channeled perceiving residual pyramid networks (TPRPN) for camera-trap images. The present TPRPN model attends to generating high-resolution and high-quality results. In order to provide enough local information, we extract depth cue from the original images and use two-channeled perceiving model as input to training our networks. Finally, the proposed three-layer residual blocks learn to merge all the information and generate full size detection results. Besides, we construct a new high-quality dataset with the help of Wildlife Thailand's Community and eMammal Organization. Experimental results on our dataset demonstrate that our method is superior to the existing object detection methods.

II. PROPOSED SYSTEM

The main aim of our project is to minimize and loss and conflict between the man and animal. The project uses image processing technique and embedded system . image processing technique is done using matlab which uses expectation maximization for segmentation, statistical and glcm for feature extraction and classification is done using ANN and SVM..classification is for finding empty land and presence of animal in the land. When the animal invade the agricultural land image is recorded and processed according to it result is serially sent to the controller broad from the control board a notification message is sent to the farmer regarding the entry of the animal in the farm land, honey bee sound is produced so that the animal will not come to the land and also land owner will take proper action for the animal to return in to the forest image of different size is collected. It can be a color image or black and white image. The collected image is given as input and it is used for further processing.

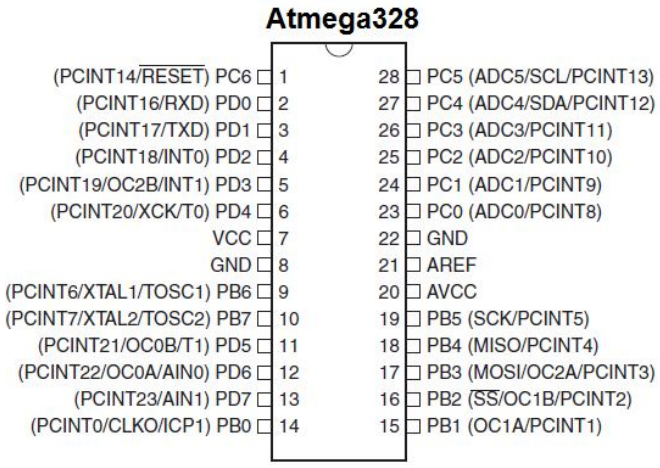
III. HARDWARE

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial converter. Revision 2 of the Uno board has a resistor pulling the 8U2 HWB line to ground, making it easier to put into DFU mode. Revision 3 of the board has the following new features: 1.0 pinout: added SDA and SCL pins that are near to the AREF pin and two other new pins placed near to the RESET pin, the

IOREF that allow the shields to adapt to the voltage provided from the board.In future, shields will be compatible with both the board that uses the AVR, which operates with 5V and with the Arduino Due that operates with 3.3V. The second one is a not connected pin, that is reserved for future purposes. Stronger RESET circuit. Atmega 16U2 replace the 8U2.

PIN DIAGRAM:

The Arduino Nano is a small scale controller board dependent on the ATmega328 (information sheet). It has 14 computerized input/yield pins, 6 simple data sources, a 16 MHz precious stone oscillator, a USB association, a force jack, an ICSP header, and a reset button. It contains everything expected to help the small scale controller; basically associate it to a PC with a USB link or force it with an AC-to-DC connector or battery to begin. The Nano contrasts from every former board in that it doesn't utilize the FTDI USB-to-sequential driver chip. Rather, it includes the Atmega8U2 modified as a USB-to-sequential converter "Nano & quot signifies "One" in Italian and is named to check the up and coming arrival of Arduino 1.0. The Nano and variant 1.0 will be the reference forms of Arduino, pushing ahead. The Nano is the most recent in a progression of USB Arduino sheets, and the reference model for the Arduino stage; for an examination with past renditions, see the file of Arduino sheets.



TECHNICAL SPECIFICATIONS

Microcontroller ATmega328
Operating Voltage 5V
Input Voltage (recommended) 7-12V
Input Voltage (limits) 6-20V
Digital I/O Pins 14 (of which 6 provide PWM output)
Analog Input Pins 6
DC Current per I/O Pin is 40 mA
DC Current for 3.3V Pin is 50 mA
Flash Memory 32 KB (ATmega328) of which 0.5 KB employed by boot loader
SRAM 2 KB (ATmega328)
EEPROM 1 KB (ATmega328)
Clock Speed 16 MHz

INPUT & OUTPUT:

Every one of the 14 computerized nails to the Nano can be utilized as an information or yield, utilizing pinMode(), digitalWrite(), and digitalRead() capacities. They work at 5 volts. Each pin can give or get a limit of 40 mA and has an interior draw up resistor (separated naturally) of 20-50 kOhms. Furthermore, a few pins have specific functions:· Serial: 0 (RX) and 1 (TX). Used to get (RX) and transmit (TX) TTL consecutive data. These pins are associated with the relating pins of the ATmega8U2 USB-to-TTL Serial chip . Outer Interrupts: 2 and 3. These pins can be arranged to trigger a hinder on a low worth, a rising or falling edge, or an adjustment in esteem. See the append Interrupt() work for subtleties. PWM:3, 5, 6, 9, 10, and 11. Furnish 8-piece PWM yield with the analog Write() function.SPI: 10 (SS), 11 (MOSI), 12 (MISO), 13 (SCK). These pins support SPI communication, which, in spite of the fact that gave by the fundamental equipment, isn't presently remembered for the Arduino language. Driven: 13. There is a worked in LED associated with computerized pin 13. At the point when the pin is HIGH worth, the LED is on, when the pin is LOW, it's off. The Nano has 6 simple sources of info, every one of which provide10 bits of goals (for example 1024 distinct qualities).

COMMUNICATION:

The Arduino Uno has a number of facilities for communicating with a computer, another Arduino, or other microcontrollers. The ATmega328 provides UART TTL (5V) serial communication, which is available on digital pins 0 (RX) and 1 (TX). An ATmega16U2 on the board channels this serial communication over USB and appears as a virtual com port to software on the computer. The '16U2 firmware uses the standard USB COM drivers, and no external driver is needed. However, on Windows, a .inf file is required. The Arduino software includes a serial monitor which allows simple textual data to be sent to and from the Arduino board. The RX and TX LEDs on the board will flash when data is being transmitted via the USBto-serial chip and USB connection to the computer (but) not for serial communication on pins 0 and 1).

A Software Serial library allows for serial communication on any of the Uno's digital pins. The ATmega328 also supports I2C (TWI) and SPI communication. The Arduino software

includes a Wire library to simplify use of the I2C bus; see the documentation for details. For SPI communication, use the SPI library.

IV. SOFTWARE

MATLAB

The name MATLAB stands for MATrixLABoratory. MATLAB was written originally to provide easy access to matrix software developed by the LINPACK (linear system package) and EISPACK (Eigen system package) projects. MATLAB is a high-performance language for technical computing. It integrates computation, visualization, and programming environment. Furthermore, MATLAB is a modern programming language environment: it has sophisticated data structures, contains built-in editing and debugging tools, and supports object-oriented programming. These factors make MATLAB an excellent tool for teaching and research. MATLAB has many advantages compared to conventional computer languages (e.g., C, FORTRAN) for solving technical problems. MATLAB is an interactive system whose basic data element is an array that doesn't require dimensioning.The software package has been commercially available since 1984 and noeis considered as a standard tool at most universities and industries worldwide. It has powerful built-in routines that enable a very big variety of computations. It also has easy to use graphics commands that make the visualization of results immediately available.Specific applications are collected in packages referred to as toolbox. There are toolboxes for signal processing, symbolic computation, control theory, simulation, optimization, and several other fields of applied science and engineering.

It allows matrix manipulations; plotting of functions and data; implementation of algorithms; creation of user interfaces; interfacing with programs written in other languages, including C, C++, Java, and FORTRAN and Python; analyze data; develop algorithms; and create models and applications.

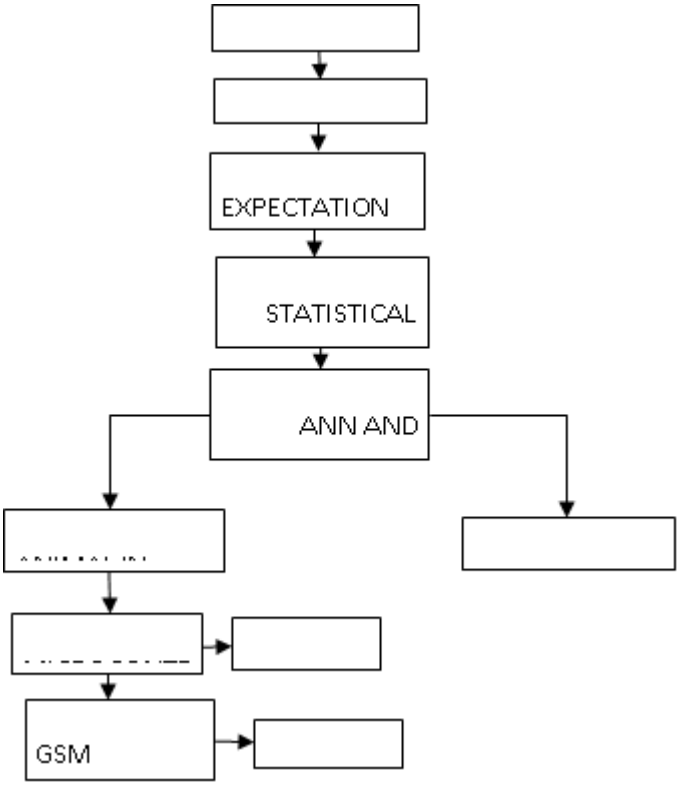
It has numerous built-in commands and math functions that help you in mathematical calculations, generating plots, and performing numerical methods.

MATLAB (**mat**rix **lab**oratory) is a multi-paradigm numerical computing environment. A proprierity programming language developed by Math Works,.

Although MATLAB is intended primarily for numerical computing, an optional toolbox uses the MuPADsymbolic engine, allowing access to symbolic computing abilities. An additional package, Simulink, adds graphical multi-domain simulation and model-based design for dynamic and embedded systems.

WORKING

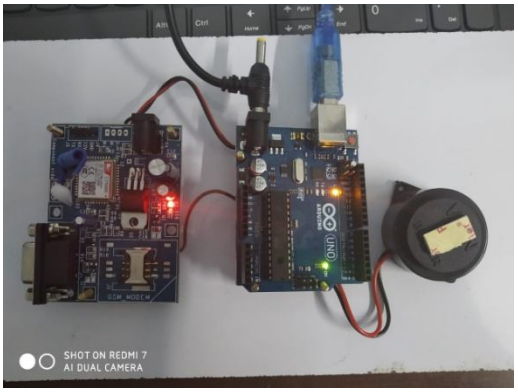
Human–wildlife conflict refers to the interaction between animals in wild and people and the resultant negative impact on people or their resources, or wild animals or their habitat. It occurs when growing human populations overlap with established wildlife territory, creating reduction of resources or life to some people and/or wild animals.When the animal invade the agricultural land image is recorded and processed according to it result is serially sent to the controller broad from the control board a notification message is sent to the farmer regarding the entry of the animal in the farm land, buzzer sound will produce so that the animal will not come to the land and also land owner will take proper action for the animal to return in to the forest.



OUTPUT

Wild animals and Human beings conflict refers to the interaction between animals of wild and people and the resultant negative impact on people or their resources, or wild animals or their habitat. It occurs when growing human populations overlap with established wildlife territory,

creating reduction of resources or life to some people and/or wild animals.



V. CONCLUSION

This project helps to reduce the conflict and used for many agriculture fields and also did not cause any affect to the animals also.Thus this project keeps track of the animal &if any animal is found then the owner/farm keeper are informed with an alarm. With this project the owner will easily get to know where the animal is.

VI. ACKNOWLEDGEMENT

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