1. **Abstract**

* Wild animals can cause significant damage to property and human lives when they invade rural areas, as is well known.
* Forest animals migrate into the surrounding agricultural fields in search of food. They cause significant damage to the crops by trampling them underfoot in addition to eating them. In certain areas, wild animals can cause up to 50-60% crop damage and sometimes 100%.
* Therefore, it is crucial to protect these areas and the people who live there from these invasions while also preventing harm to the animals.
* Our research has shown that animals are primarily scared of two things:

1) High beam flickering floodlights

2) Specific acoustic frequencies.

* When the animals come in contact with high-beam flickering floodlights they get frightened and assume it as a sign of danger and discontinue their path.
* Coming to the frequency, every animal will have a certain audio frequency that they don’t want to hear or get irritated
  + For example: Elephants being such huge animals, they get irritated by the buzzing noise created by the honey bees which come between 500-550hz.
* Surprisingly many animals also hate this range.
* Hence we aim to detect the incoming animals, generate a frequency that affects that particular animal followed by the flickering lights, deter them, and wirelessly alert the owner about the intrusion
* The core of our system lies in the utilization of a laser-based protective barrier in combination with thermal infrared sensors. When an animal interferes with this laser system, Uther on confirmation by the thermal sensors that there's intrusion, it triggers a response that includes flashing floodlights and generates an acoustic frequency to deter the incoming animal. This combination creates a startling effect, prompting the animals to retreat while alerting property owners or managers to the intrusion.
* The technique presents a viable substitute for traditional approaches by preventing injury to animals and reducing property damage

Applications

* Animal-Friendly Barriers: In some cases, animal deterrents are designed to protect animals from harm.
* Garden Protection: Animal deterrent devices are often used to protect gardens from pests like deer, rabbits, and squirrels.
* Pest Control: In agricultural settings, animal deterrent devices can be used to keep pests like raccoons, rodents, and birds away from crops and livestock feed.
* Home Security: Some animal deterrent devices also serve as security measures. Motion-activated lights or alarms can deter both human intruders and wildlife from approaching a property.
* Livestock Protection: Farmers use animal deterrent devices to protect their livestock from predators such as wolves, coyotes, and birds of prey.
* Public Spaces: Some urban areas use animal deterrents to discourage pigeons, seagulls, or other birds from gathering in public spaces.
* Plantations and farms are the foundation of a country's economic stability; thus it is crucial to safeguard these crops and their keepers without seriously harming the animals.
* So, after installing this device, all the issues will be resolved.
* Farmers may purchase and install these gadgets since they are affordable and can be placed where they are needed.
* Neither the farmers nor the animals are damaged by this product.
* This leads to strong agricultural yields, which raises farmers' standards of living and helps to stabilize the economy of the nation.
* **Our mission is to make this gadget accessible and inexpensive to any farmer who is having this problem.**
* Objective: This project aims to provide a novel and economical approach to reduce the influx of wild animals into farms or estates while guaranteeing the well-being of the animals. This system uses a non-lethal method to frighten out animals that enter the protected area. It does this by using high-beam flickering flood lights and use of acoustic frequency

Future scope

* Introducing IR temperature camera.
* Upgrading wireless communication capabilities.
* Extending the communication range by using RF transceiver boards like the LORA
* Further integration of GSM to obtain real-time updates.
* At the receiver end, create a user interface that is straightforward.
* Train an AI model that can recognize the detected animal using parameters like body temperature and the pattern of the rainbow colors generated.
* Create audio frequencies that frighten that specific species.
* Wirelessly alert the owner by sending him footage of the triggered spot in real time.
* Installing solar panels will make it independent from conventional electrical sources.