

Problem Statement-

The management of livestock and to prevent it from being theft is a big problem in a developing country like India. Solving the problem faced by livestock farmers in India seems most justifiable as it accounts for almost half of the livestock production of the world. The major problem today in India is the theft of livestock animals. There are various gangs operating all over the country indulging in this type of crime. They usually operate during the night as the owners are asleep. They come in trucks or big vehicles for the easy transportation of the animals. This type of crime is easy money and the punishment is also not that harsh which results in more and more cases each year. They then sell them to illegal slaughterhouses for at least \$95 per cow or buffalo. In India, more than 800 million people live on a daily wage of less than \$2, therefore this crime is tempting for a huge population. Furthermore, some buffaloes are priced around \$1000 each which also gets stolen every year.

Existing Ideas:

- 1) Theft alert and drone operation. A tracking device alerts the owner on his smartphone and then a drone can go to the lost cow with a camera.
- 2) Electronic Leg Bands that interact with sensors mounted throughout the barn. It makes sure that the animal is in the desired area at the desired time gets fed. Tracks Cud chewing and notifies at the appropriate time for insemination. Addresses problems of getting lost and eaten by a predator.
- 3) Livestock management app-https://youtu.be/ZJLYvpXCJ_M. Drawback- need internet connection
- 4) Geofencing: GPS integrated with collar. Drawback: it only works if the cow is trying to go on its own.

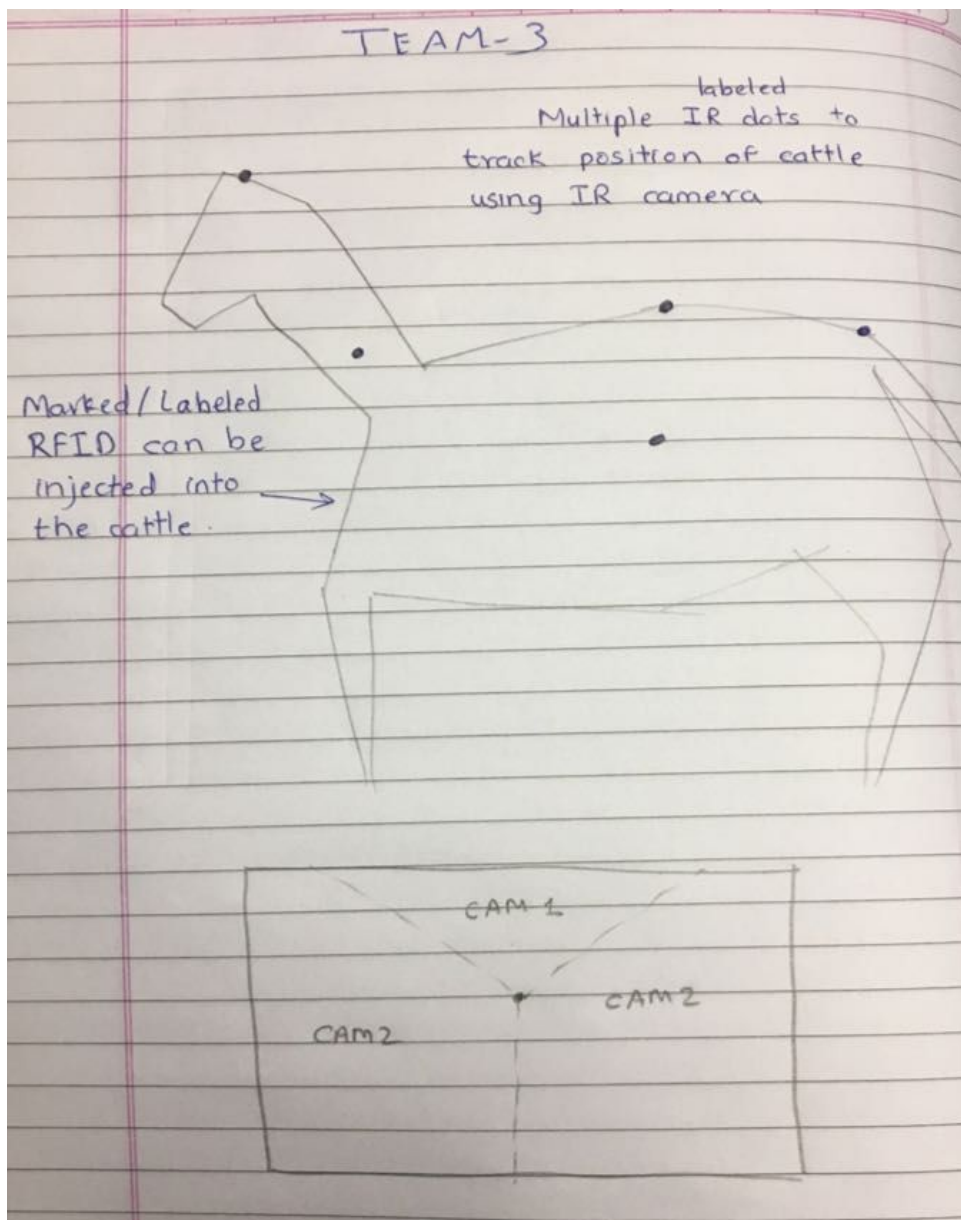
Data Supporting the fact that cattle theft is common in india:

- 1) In New Delhi, Criminals round up some of the roughly 40,000 cattle that wander the streets of this megacity and sell them to illegal slaughterhouses located in villages not far away.(New York Times)
- 2) India is the biggest beef exporter in the world

Proposed solution

Tag every livestock with a Reflector Tapes/IR Dots or RFID tag (depending on the number of cows and area of the field) and track their movements using RFID tag readers or IR camera installed in the ranch. We can also use UH frequency- RTLS - Real Time Location Systems to track the exact positions in the ranch and alert the farmer in case of a runaway.

- A webcam can be converted to IR camera using a simple trick: [Here](#)



Technical Challenges:

1) Sticking the IR dots to the cows.

Solution: Can stick it on a collar or ear rings.

2) Cattle potentially covering the IR dots from the camera view.

Solution: putting multiple IR dots.

3) If the number of cows is too high, the signal from different RFIDs might interfere with one another.

Solution: We will use RFID only for long distance tracking, and the number of cows getting lost will most probably be one at a time OR if the number of cows are too high, not use RFID and just

Social Challenges:

1) Indian (Hindus) consider cows to be very holy and may not allow us to put IR dots and inject RFIDs in them.

2) Awareness of use.

Political Challenges:

1) Implementing a business based on cows will draw extreme opinions from the population of India, especially from small towns and villages.

Buyers and users- All the farmers, across the country(India). Cattle protection agency of Government.

Design attributes- Price, Energy consumption, Longevity, Reliability.

Design Variables- Number of cows, Area of the field, Range of the camera

Pitch of the product: Tracking and management of your livestock using RDIF tags and IR dots.

Tagline of our product: "Smart Cow."