Lean Start-Up Management (MGT1022)

Project Report

Camcann

PROJECT SUPERVISOR

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VIT UNIVERSITY

This is to certify that the project work entitled “Camcann” that is being submitted by Group 1 for LEAN START-UP MANAGEMENT is a record of bonafide work done under my supervision. The contents of this project work, in full or in part, have neither been taken from any other source nor have been submitted for any other CAL course.

Date:

Signature of Faculty:

Prof. Mercy Matthew

ACKNOWLEDGEMENT:

We would like to acknowledge thanks to our faculty, **Prof. Mercy Matthew**, for providing us with the opportunity of preparing this project report for the subject of Lean Start-up Management (MGT1022).

INTRODUCTION

Machine learning and understanding of human actions is a challenging area that has received much attention within the past years. Video Surveillance is one of the active research topics in Image Processing. Video Surveillance started with analogue CCTV systems, to gather information and to monitor people, events and activities. Existing digital video surveillance systems provide the infrastructure only to capture, store and distribute video, while leaving the task of threat detection exclusively to human operators.

Human monitoring of surveillance video is a very labor-intensive task. Detecting multiple activities in real-time video is difficult in manual analysis. Thus the Intelligent video surveillance system is emerged. The analytics software processes video flow images to automatically detect objects (peoples, equipments, vehicles) and event of interest for security purposes. In real time, video surveillance systems detect situations in video flow that represent a security threat and trigger an alarm. Observing or analyzing a particular site for safety and business purposes is known as video surveillance. Security and crime control concerns are the motivating factors for the deployment of video surveillance cameras. Video surveillance cameras are used in shopping centres, public places, banking institutions, companies and ATM machines. Nowadays, researches experience continuous growth in network surveillance. The reason being is the instability incidents that are happening all around the world.

ABSTRACT

Video Surveillance has been used in many applications including elderly care and home nursing etc. Smart video surveillance systems are capable of enhancing situational awareness across multiple scales of space and time. It describes mobile based remote control and surveillance architecture. This project makes use of Opencv library to capture camera images and detect intrusion using image comparison technique.

Once the comparison is done and an intrusion is found, it sends the streamed video from server to remote administrator over android phone. Admin can then take appropriate action and alert local security. Smart Surveillance is the use of automatic video analytics to enhance effectiveness of surveillance systems. This system introduces intelligent analysis of single person activity to enhance the security system in home and also enriches the current video surveillance systems through an automatic identification of abnormal behavior of the person.

The relevant data is recorded and alert is given to the user by sending MMS, SMS or mail. The user can view the particular video. This system maintains the security situation at home and this reduces the incidence of burglary cases and enhances social stability.

Market Research

Source India Times 2014

On field market research was carried out in various segments

Malls

Industries

Jwellery shops

Railways

Tech campus

To find all the existing solution

Startup Expo 3 in Delhi

Security Expo in Delhi

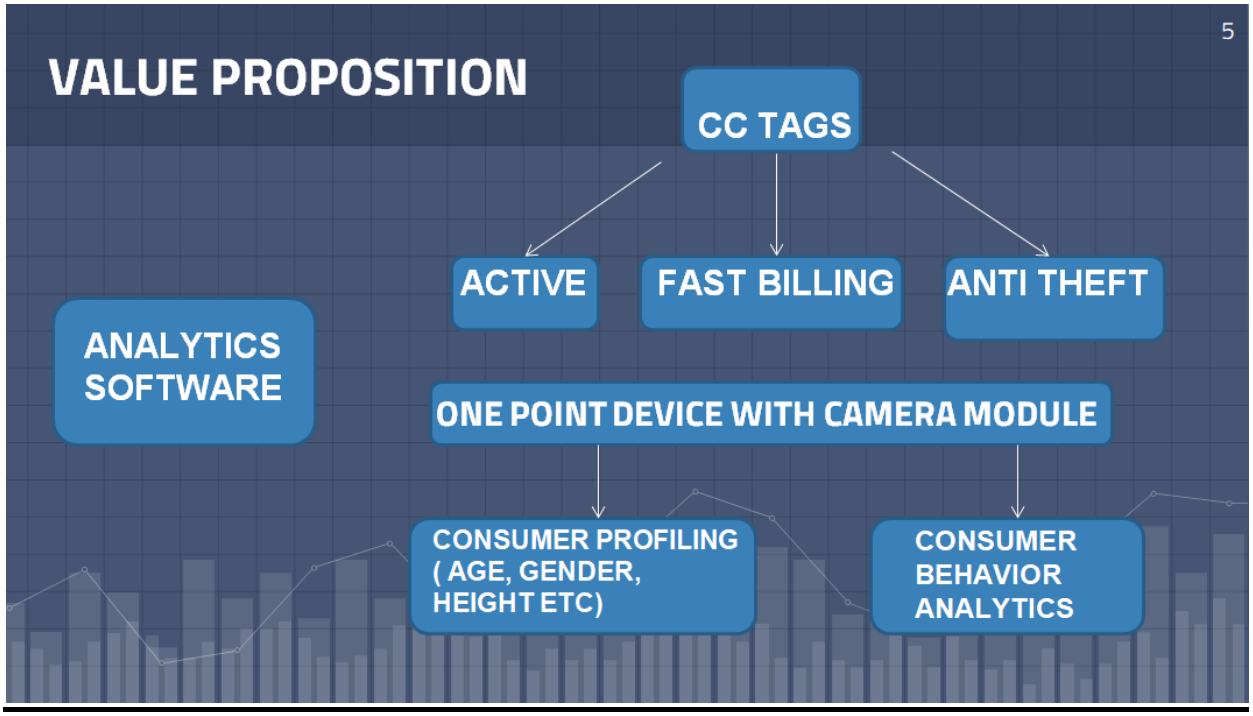
Investor Summit in Dehradun, Uttarakhand

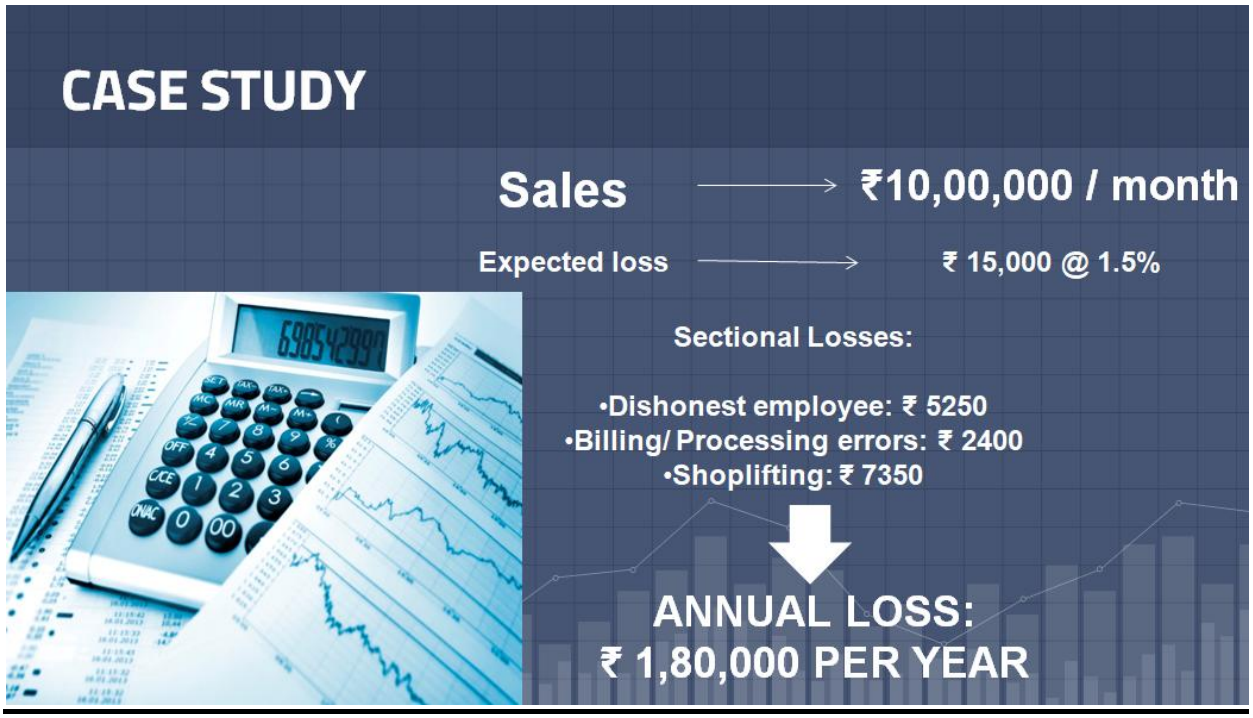
Technical proof of concept

Consumer Profiling

Human posture Estimation

Case Study


5
VALUE PROPOSITION
CC TAGS
ACTIVE
FAST BILLING
ANTI THEFT
ANALYTICS SOFTWARE
ONE POINT DEVICE WITH CAMERA MODULE
CONSUMER PROFILING (AGE, GENDER, HEIGHT ETC)
CONSUMER BEHAVIOR ANALYTICS


CASE STUDY
Sales
₹10,00,000 / month
Expected loss
₹ 15,000 @ 1.5%
Sectional Losses:
•Dishonest employee: ₹ 5250
•Billing/ Processing errors: ₹ 2400
•Shoplifting: ₹ 7350
ANNUAL LOSS:
₹ 1,80,000 PER YEAR

BUSINESS IDEA

This can be displayed with the help of two models:

- Business canvas model
- Lean canvas model

BUSINESS CANVAS MODEL:

It is a strategic management and lean start-up template for developing new or documenting existing business models. It is a visual chart with elements describing a firm's or product's value proposition, infrastructure, customers, and finances. It assists firms in aligning their activities by illustrating potential trade-offs.

The business canvas model of the start-up is as given below:

The Business Model Canvas | CAMCANN | Year 2018

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
• GPU Manufacturers • Cloud Computing Companies • Funding partners • Incubation Cells • Digital India • Media • Automation based companies • Network Security companies • Sound Synthesizing companies	• Market surveys • Research & Development • Prototype Developement • Marketing campaign • Testing in different domains and error rectification • Idea validation • Internships programs • Collaborating for Hack-a-thons **Key Resources** • IP Cameras • GPUs • Computer equipment • Sensors • Microcontrollers • Brand Value • Compatibility • Sound Synthesis and Localisation	• Video Analytics • Add-ons to the surveillance system • Energy efficient and self sufficient CCTV system • Simplified User Interface with an assistant available online / offline • Easy integration to the automation system • Data Retention • Network Security • Machine Learning • Artificial Intelligence • 180 degree movement • Sound localisation	• Personalized • Understanding domain specific needs and designing accordingly • Data privacy *Channels* • Online and Offline showcasing of the concept • Collaborations • B2B • B2C	• ATMs • Highways and Toll gates • Parking Lots • Complexes and big buildings • Smart homes • Small Scale Businesses like Jewelers and convenience stores • Pharmaceutical Research Labs • Manufacturing Industries

Cost Structure	Revenue Streams
• Prototype development • Workplace • Advertising/Marketing • Salaries • Documentation • Travelling • Utilities • Miscellineaous	• Selling software • Add-on hardware • Cloud services • Subscriptions • Specific functionality development • Data sets

LEAN CANVAS MODEL:

Unlike a business plan that takes too long to write, and more important, no one reads, a Lean Canvas is designed to help you create a quick snapshot of your idea, share it someone for feedback, and refine it iteratively.

The lean canvas model of the stat-up is as given below:

CamCann

<table>
<tr>
<td rowspan="2">Problem / Need
Data retention in current surveillance technology
Complex systems
Lack of activity detection
Accuracy
Easy bypassing</td>
<td>Solution
Surveillance technology that can sense movements and activities through its senses and can perform according to the detection and recognition. A system with high data retention for future use and analysis.</td>
<td rowspan="2">Unique Value Proposition
Video Analytics
Add-ons to the surveillance system
Energy efficient and self sufficient CCTV system
Simplified User Interface with an assistant available online / offline
Easy integration to the automation system
Data Retention
Network Security
Machine Learning
Artificial Intelligence
180 degree movement
Sound localisation</td>
<td>Competitive Advantage
Sound Localisation system
Data Retention
Activity Detection
180 degree access view
Costing
Simplified User Interface</td>
<td rowspan="2">Customer Segments
ATMs
Highways and Toll gates
Parking Lots
Complexes and big buildings
Smart homes
Small Scale Businesses like Jewelers and convenience stores
Pharmaceutical Research Labs
Manufacturing Industries</td>
</tr>
<tr>
<td>Key Metrics
Market surveys
Research & Development
Prototype Developement
Testing in different domains and error rectification
Idea validation
Internships programs
Hack-a-thons
Number of customer approaches</td>
<td>Channels (Marketing and Communication)
Online and Offline showcasing of the concept
Collaborations
B2B
B2C</td>
</tr>
<tr>
<td colspan="3">Cost Structure
Prototype development
Workplace
Advertising/Marketing
Salaries
Documentation
Travelling
Utilities
Miscellineaous</td>
<td colspan="2">Revenue Streams
Selling software
Add-on hardware
Cloud services
Subscriptions
Specific functionality development
Data sets</td>
</tr>
</table>

MARKETING

MARKETING PLAN REPORT:

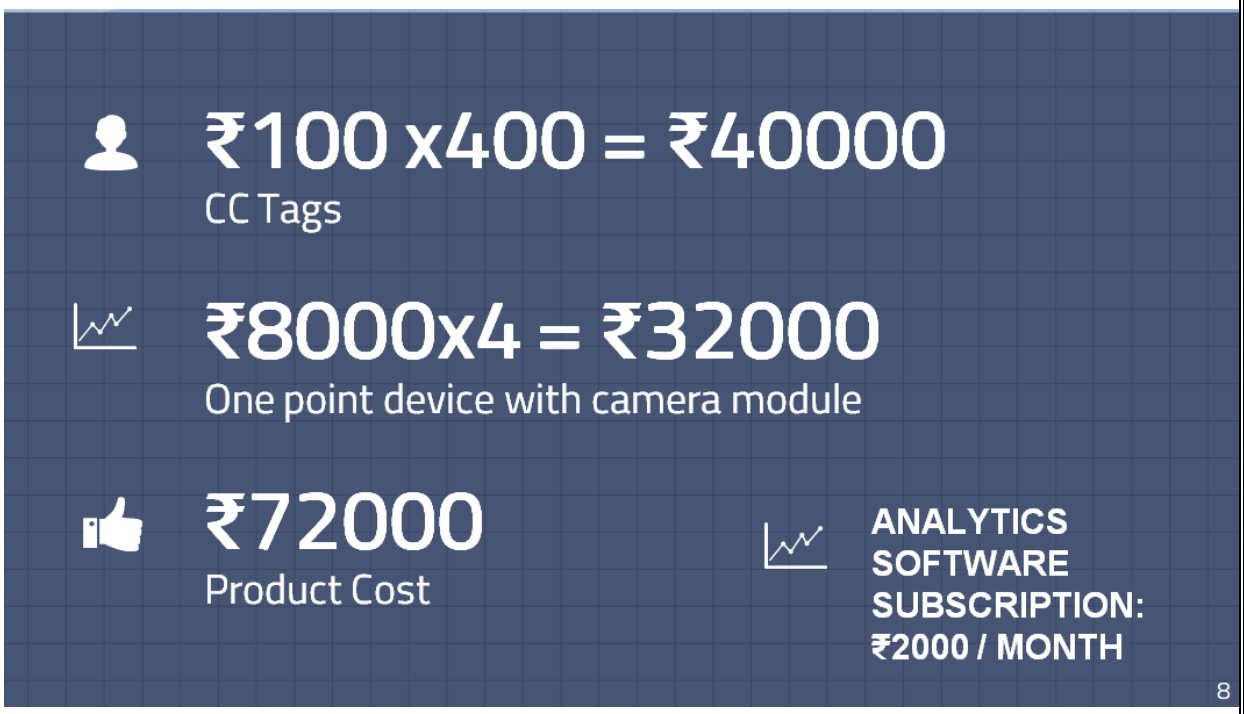
Vision statement

An automated visual surveillance system with advanced techniques incorporated: Real time object detection, recognition of generic objects, specific abnormal behaviour triggering a notification & multi camera cooperative tracking.

The 7 Ps of marketing

1. **Product:** M.V.P. (Smart Camera with Object Detection and Add on features).

2. **Price: Initial Investment for a retail store of 2000 sq foot area**



3. **Place:** Domain - Retail stores

4. **Promotion:**

1. Content Marketing:

- **What trend says:**
  - 90% of B2C organizations are extremely/very committed to content marketing.
  - 80% of B2B marketers agree that content marketing is an important part of their marketing program.
- **Reasons:**
  - Increase visibility for your brand.
  - Build lasting relationships with your customers.
  - Boost brand awareness and brand recognition.
  - Build credibility and authority.
  - Create thought leadership.

- **Medium:**
  - LinkedIn : Connects, Articles
  - You Tube : Videos
  - Tech Magazines : Interviews, Product experience.
  - Website : White paper, timeline , product specification, collaborations
  - Blogs: Progress we make, advancement in technology, awareness related to security.

2. Influencer Marketing:

- **What trend says:**
  - The trend of influencer marketing is catching on really fast.
  - 94% of marketers in a survey believed influencer marketing to be effective.
  - Influencer marketing is a highly effective tool for start-ups to grow their brands.
  - Inexpensive compared to traditional marketing channels

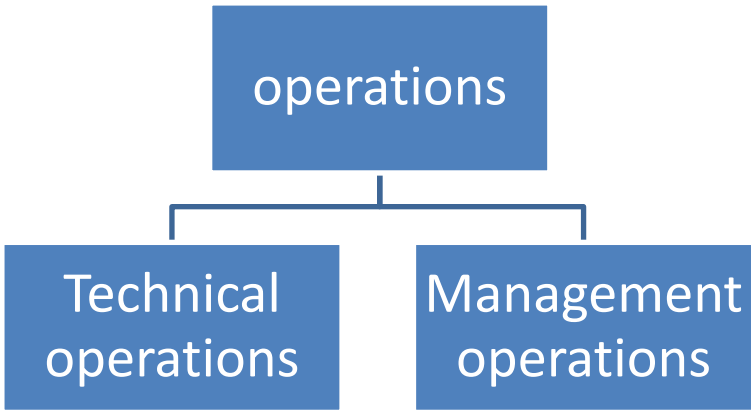
- **Reasons:**
  - Most customers have become immune to traditional marketing channels.
  - Influencer marketing is less expensive than other promotional strategies.
  - Influencer marketing is easy-to-implement
  - Word-of-mouth aspect of influencer marketing builds trust for your brand.
  - Customers will engage with your brand because of the authenticity of influencers.

5. **People:** People working with us represents our company. So taking care of our discipline and other requirement take an important role for the company.

6. **Process:** To find out which market to tap in next:
   - Taking regular feedbacks.
   - Iteration according to user needs and demands.
   - Online Polls.

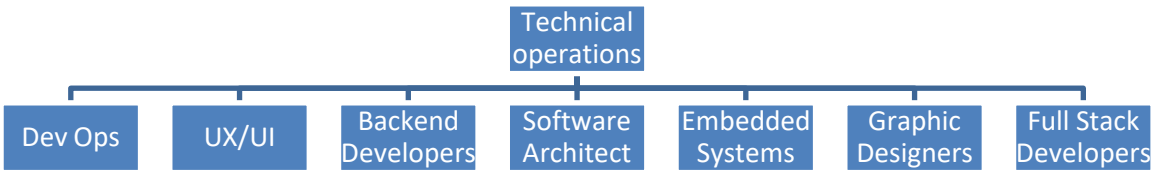
7. **Physical Evidence:** Getting accreditation, recognition and collaborations will help us reassuring the customer about our product and company.

OPERATIONS



As shown by the hierarchy above the operations of the start-up is divided between two departments, namely technical operations and management operations.

The hierarchy of technical operations is given below:



The hierarchy of management operations is given below:

PROJECTIONS FOR FIRST YEAR

The projections for the first year are as follows:

EXPENDITURE	Q1	Q2	Q3	Q4
RESEARCH AND PATENT	5,000	25,000	10,000	10,000
SALARY	80,000	1,00,000	1,20,000	1,20,000
TRAVEL	15,000	15,000	15,000	15,000
TECHNICAL EQUIPMEMTS	30,000	20,000	10,000	10,000
SERVER USAGE	3,000	3,000	3,000	3,000
ELECTRICITY AND OFFICE	10,000	10,000	10,000	10,000
ADVANCED PERSONAL COMPUTER	80,000	-	-	-
BUISINESS NCORPORATION AND ACCOUNTS	15,000	5,000	5,000	5,000
GPU	1,00,000	-	-	-
TOTAL	₹3,38,000	₹1,78,000	₹1,73,000	₹1,73,000

Sample Surveillance system, Printers, Office space, Computing labs were provided by the sources which otherwise would have cost us another ₹80,000

SOURCES OF FUNDS

Raised so far

1. ₹1,00,000 from TBI (Technical Business Incubator) of Vellore Institute Technology which is in pre-incubation.
2. ₹20,000 from family
3. ₹20,000 from winning hack-a-thon

To be raised

4. ₹3,00,000 from Ketto Crowdfunding Campaign
5. ₹10,000 per month from Uttarakhand Government, Also ₹5,00,000 for prototype development.
6. ₹10,00,000 from Nidhi Prayas (A incubation initiative) which will be obtained after the first quarter.

Purpose of the System

The main purpose of this system is to improve the awareness of security personal and decision makers by collecting real-time information automatically. The system raises an alarm whenever unacceptable movements are detected. Hence, the system has the ability to detect mobile objects in the scene and to classify their movements (as allowed or disallowed). Wann-Yun Shieh(Wann-Yun Shieh*et al*., 2009) proposed a human-shape-based falling algorithm and this algorithm was implemented in a multi-camera video surveillance system.

The algorithm is implemented in real world environment for functionality proof. In this algorithm, multiple cameras are used to fetch the images from different regions required to monitor. Also, in that case a short message will be sent to someone who needs to be alerted. Hae-Min Moon(Hae-Min Moon*et al.*,2010) proposed the system on human identification method that uses height and clothing-colour information appropriate for the intelligent video surveillance system based on smartcard. Reliable feature information can be obtained using the smartcard. It uses octree-based colour quantization technique to the clothing region for colour extraction and height is extracted from the geometrical information of the images.

The major driving factor of the market was the increasing demand for advanced security & surveillance systems in civil and government agencies to enhance safety and security. Burgeoning data breach cases and brute force attacks have increased the demand for advanced surveillance systems, which in turn has increased the demand for facial recognition solutions. The significant increase in incidence of terrorist attacks on government organizations and the commercial sector in the recent years drives the companies and governments to implement robust physical security strategies.

Moreover, this technology is expected to witness high adoption in intelligent signage application on account of rising concerns of security and use of marketing strategies to analyze the customers based on their age, gender, facial attributes. Over a period, physical security and intelligent signage are expected to fuel the demand of facial recognition technology.

Technological advancements are likely to reduce the prices of facial recognition systems in the future. Software development kit (SDK) technology has improved the accuracy in terms of recognizing facial features. Therefore, the improved quality of products enhances awareness amongst users, which in turn is expected to increase adoption of facial recognition biometrics in the future.

Increasing demand of facial recognition in smart devices, such as smartphones, laptops, tablets, and personal digital assistants, which are used for both personal and business purposes, presents various growth opportunities for the facial recognition market. Moreover, burgeoning number of drones in various commercial sectors, such as media & entertainment, inspection, and surveying, contributes to the

rising demand of facial recognition. For instance, as per FAA, around 30,000 drones are expected to be introduced by 2020. Therefore, these factors are expected to provide immense opportunity for the growth of facial recognition technology.

Currently, high implementation costs and low accuracy of the technology negatively affect the growth of the market. Costs such as maintenance and middleware costs also contribute to the implementation cost. However, few manufacturers, such as FaceFirst, Inc., have started using efficient algorithms, such as PCA, FFT, to improve accuracy and reduce the cost of facial recognition technology. Therefore, with the development in technology, lack of accuracy and high implementation cost of facial recognition technology are likely to reduce their impact during the forecast period.

POTENTIAL CUSTOMERS

Application areas	Features	Potential	Notes
Security market	Automation of checkpoints, enterprise internal security systems	High	Technology requirements are low; the average check is moderate. Big market players cannot cope with a large number of small orders.
Retail	Marketing needs: selection of the most relevant products for customers	Medium	There is no significant urgency. Due to high prices, FR is often replaced by other authentication methods. Technology requirements are low.
Public security market	Identifying people in crowds and public places	High	High relevance and high demand, especially by law enforcement forces. However, an unattainable level of technology is required.
Banking	Systems for employee monitoring and customer recognition in banks	Low	The key player is Vision Labs which developed its product taking into account the segment's requirements. Also, the company has some large banks among its customers.
Social networks	Services for people search by photo, face recognition in photo and video	Low	Low solvency among the population. The key player is the Ntech company whose experience has not been really successful.

Benefits of the Proposed System

1. Our system allows user to view videos even if he is at some remote place. Due to http protocol usage, the application provides online video streaming functionality so that user can view the videos from web browser also i.e. through android device as well as user's computer.
2. We do not require use of any additional hardware for image matching and intrusion detection.
3. Our system uses image matching technique, so it gives more precise and accurate results.
4. Entire Smart surveillance can be made remote using this architecture. User can even control the system through a remote place. He can give commands to switch on/off the system camera.
5. The user gets notified as soon as the intrusion is detected. Thus, the user can take appropriate action without any delay. Smart video surveillance is integrated with intelligent video movement detection analysis systems combine with SMS notification system.

Awards

Team CamCann at Hacker tech by E-cell:-

1. Best innovative award
2. Best presentation award
3. Award for Pre incubation from TBI - ₹100000
4. Best team along with a cash prize of ₹20000

CONCLUSION

Smart video surveillance system significantly contributes to situation awareness. Such systems transform video surveillance from data acquisition tool to information and intelligence acquisition systems. Real-time video analysis provides smart surveillance systems with the ability to react in real-time. Our system senses the intrusion and sends notifications to authorized persons so that action can be taken in response to the intrusion.