

Tentative Titles of the projects are given below

Healthcare

1. Drug discovery using Neural Networks
2. Tumor detection from Brain MRI images
3. Detection and Classification of cancer cells in MRI Images
4. Organ Segmentation and Labelling in MRI Images
5. Cancer cell detection and segmentation
6. Blood flow detection and monitoring using Sensory data
7. Diabetic Retinopathy Detection and Segmentation from MRI Images
8. Personalized Treatment based on Patient History
9. Medicine Recommendation based on Gender, age and physical Attributes
10. Recommendation of doctors and medicines using review mining
11. Disease Prediction using patient treatment history and health data
12. Real-time health monitoring using wearable devices
13. Prediction of epidemic outbreaks using Social Media Data
14. Predicting Risk for Medical Insurance
15. Activity monitoring and unusual activity detection for elderly homes
16. Recognizing exercises for physiotherapy videos
17. Detecting Genes responsible for cancer development
18. Prediction of Disease progression for treatment planning

Agriculture

19. Plant disease identification using leaf images
20. Plants Recognition using Convolutional Neural Networks
21. Fruits counting for automatic inventory management
22. Land cover segmentation & classification using image data
23. Crop type classification using image classification
24. Pest detection and classification using image classification
25. Weed plant detection from agricultural field images
26. Predicting yield, soil moisture and weather using images processing
27. Plant Gene Classification and Functionality Prediction
28. Automated quality assessment of crops

Space Research & Satellite imagery

- 29. Change detection for deforestation, water reserves from Satellite images
- 30. Detection of Unmanned Vehicles (UMV) and Drones
- 31. Segmenting Satellite Images for detection of road, buildings, natural resources etc.
- 32. Target recognition in SAR images
- 33. Scene segmentation in rural and urban regions from Remote Sensing Data
- 34. Detection of Anomaly in SAR images
- 35. Classification of Terrain from Satellite Imagery
- 36. 3D reconstruction from multimodal satellite data
- 37. Classification of galaxies
- 38. Galaxy simulations to understand their formation
- 39. Detection and Segmentation of different structures on planet surface images

Cyber Security

- 40. Intrusion detection in networks and servers
- 41. Malware identification using deep learning
- 42. Anomaly detection in network activities
- 43. Virus/Malicious file detection in a shared environment
- 44. Spam SMS filtering Using Machine Learning
- 45. Advertisement Click Fraud Detection
- 46. Webpage classification for safer browsing

Education

- 47. Predicting Student Performance using Regression analysis
- 48. Automatic scientific article summarization
- 49. Automatic essay evaluation system
- 50. Plagiarism detection for regional languages
- 51. Lecture video summarization using multimodal information
- 52. Feature based opinion mining on student feedback
- 53. Face recognition based attendance system

Video Processing

- 54. Real-time generic object detection & tracking
- 55. Pedestrian Detection from low-resolution videos
- 56. Detection and classification of vehicles
- 57. Vehicle detection and speed tracking
- 58. Detection of signals, and lane for self-driving cars
- 59. Road Crack Detection and Segmentation For Autonomous Driving
- 60. Crowd counting and monitoring for surveillance videos
- 61. Unusual Activity & Anomaly detection in surveillance
- 62. Human activity detection for surveillance video Compression
- 63. Gesture recognition for Human Computer Interaction
- 64. Real-time video to text transcription for visually challenged person
- 65. Real-time speech recognition for regional languages
- 66. Real-time OCR for Regional Languages
- 67. Face Recognition & expression recognition Mobile App for Visually impaired person
- 68. Action recognition for controlling electronic appliances in homes
- 69. Place recognition app for visually impaired person
- 70. Text to video generation for News Stories
- 71. Salient region detection for targeted advertisements placement in videos

Business

- 72. Sales prediction using Regression Analysis
- 73. Comparative sales analysis of different stores, customers, demographics
- 74. Customer Classification based on the historical purchase data
- 75. Predicting product development time and cost using production data
- 76. Predicting housing prices for real estate companies
- 77. Personalized marketing and targeted advertising

Insurance

- 78. Fraud/abuse detection for insurance companies

79. Predicting risk for new Insurance using customer information

Banking

80. Credit card fraud detection using historical transaction data

81. Loan Risk Prediction using User transaction information

82. Customer segmentation for detecting valuable customers

Crime

83. Crime pattern detection using historical data

84. Geographical crime rate prediction

85. Criminal behavior analysis and segmentation

Social Media Analytics

86. Product opinion mining for competitive market analysis

87. Customer requirement analysis using User Generated Content

88. Consumer behavior analysis using User Generated Content

89. Rumor detection from Social Media

90. Political opinion mining for popularity prediction

91. Terrorism detection from social media

92. Stock prediction using Twitter sentimental analysis

93. Restaurant Review Classification And Recommender System

94. Fake news detection in online social media

95. Detection violent and abusive content in social media

Miscellaneous

96. Automated Machine Translation for Regional Languages

97. Virtual Personal Assistant Apps

98. Developing a Chatbot using sequence modelling

99. App development for collaging images into attractive videos
100. Travel route suggestion based on pattern of travel and difficulties

Applications

Below we have given a list of some tentative product ideas, which may be taken up by different Research Groups/institutions under this initiative. Some of these may change and evolve based on further inputs. More will be added in the list as we get feedback from the practitioners.

Miscellaneous

1. Detecting incidents of cyber bullying

Input: text feed from social media conversations
Output: cyber bullying victim and bully identified

2. Characterizing mental stress and suicidal tendencies

Input: text feed from online profiles and conversations
Output: people suspected to have stress or suicidal tendencies are flagged

3. Detecting click-fraud in online advertising

Input: click data from online advertisement
Output: fraudulent clicks and click patterns detected

4. Detecting fake news in online news media

Input: news feed from online media
Output: fake news, rumours, clickbait characterised

5. Identifying hate crime in online media

Input: text feed from online conversations
Output: hate speech, offensive comments, racist comments etc. detected

6. Malware identification

Input: executable files (.exe) of several software/apps
Output: malicious software/apps identified

7. Intrusion detection in enterprise networks

Input: network logs from router/switches of enterprise networks
Output: possible intrusions, botnet activity, DDoS activity, etc. flagged

8. SMS/IM spam filtering

Input: messages from SMS or IM apps (WhatsApp, Line, etc.)

Output: spam messages filtered

9. Detection of malicious URLs

Input: Visited URLs

Output: malicious URLs (hosting exploit kits, malware, etc.) are detected

10. Detecting phishing websites

Input: website URL

Output: phishing websites flagged

Robotics and Automation

11. Detecting shapes of common and uncommon objects

Input: different objects

Output: robot classified the shapes

12. Determining size of boxes

Input: different size of boxes

Output: robot determines the size of the box

13. collision avoidance using video processing

Input: a path for the robot to move on

Output: robot avoids collision with objects like a wall etc.

14. Personalized greetings

Input: live video feed

Output: robot makes personalized greetings (text or speech) to the people

15. Optimal path traversal

Input: starting point and destination point

Output: robot calculates and traverses optimal path

16. Detecting dangerous objects at public places

Input: live video feed

Output: robot detects dangerous objects (knife, explosives, etc.)

17. Automating indoor weather adjustments

Input: indoor weather data (temperature, humidity, etc.) and user preferences

Output: auto-adjustment as per user preferences

18. Detecting flawed packaging

Input: photo/video of packaged products/consignments

Output: flawed or broken packaging is detected

19. Monitoring for thieves and intruders

Input: live video feed

Output: a given person is thief/intruder or not

20. Monitoring for safety hazards

Input: video feed of industry area

Output: safety hazards detected

Agriculture

21. Predicting the crop based upon the soil

Input: images of the soil and climate information

Output: Predicting the suitable crop

22. Damage assessment of crops because of the bad weather conditions

Input: images of the crop before and after the damage

Output: Prediction of damage level and crop insurance

23. Automatic Health inspection

Input: Multiple images of a plant.

Output: Prediction of health of the plant and possible medicines

24. Automatic soil testing using AI

Input: Images of the soil

Output soil health

25. Weather and crop-based irrigation system.

Input: Weather condition and crop information (crop age, crop type)

Output: Irrigation is required or not

26. Assessment of grain of production

Input: crop image of the whole field

Output: prediction of quantity of grain production

27. Disease Detection in the plants

Input: image of the plant

Output: disease and pesticide recommendation

28. Recommendation of crop based upon the crop history

Input: crop history

Output: Recommended crop with fertilizer

29. Chatter bot for farmers

Input: Knowledge base of the crops in the regional language.

Output: Required information through chat bot

30. Crop Waste management

Input: Images of the waste

Output: Companies and their contacts where these wastes are useful.

Social Media

31. Suggesting Engaging Content for Social Media

Input: Browsing History and previously watched content

Output: Customized Content

32. AI-Powered Image Recognizers from Social Media

Input: Image of the target (Person)

Output: Identified person

33. Smart Messenger Bots by understanding the personality

Input: Social Media feed of the person

Output: Messenger bot reply based upon his personality.

34. Better career and Job Suggestions

Input: Social Media and LinkedIn feed of the person

Output: Understanding the skills and job suggestion

35. Reaching the right audience

Input: Understanding the search history in social media websites

Output: Better Product suggestions.

36. Understanding the content on the social media websites and predicting the possible violence

Input: Social Media feed

Output: Predicting the location and probability of violence and prepare accordingly.

37. Understanding the personality and probability of joining terrorist groups

Input: Social Media feed and search history

Output: Predicting a person who might join terrorist group or who is an easy target which can be influenced

38. Understanding the stress level of students

Input: Social Media feed

Output: Predicting the stress level of students and based upon stress level give them consultation.

39. Predicting the fake locations on social Media

Input: Image uploaded by user

Output: Predicting exact location

40. Predicting the molesters and eve-teasers

Input: Social Media feed and history

Output: Predicting the behaviour of a person.

Healthcare

41. Physiotherapy exercise monitoring application

Input: Real time video of user doing physiotherapy exercise

Output: recognized exercise and its counting, detection of wrong exercise positions

42. Health monitoring application using wearable devices

Input: Heart beat rate, blood pressure, motion data from wearable devices
Output: statistics of average, alerts of health problems

43. Skin disease detection app

Input: Photos of skin surface taken in a mobile camera
Output: Recognized skin disease and its severity

44. Detecting face features, hair loss, wrinkles, pimples

Input: face photos of users taken from mobile camera
Output: Detection of hair loss, wrinkles, pimples and their counts etc

45. Food recognition and calorie, vitamin detection

Input: Food photos taken from mobile camera
Output: Recognized food and its calorie and vitamins

46. Finger print based disease detection

Input: Finger print data taken from mobile device
Output: Detected disease or health status of the user

47. X-Ray image description app

Input: Photo of X-Ray taken from the mobile app
Output: Description and results about the X-Ray and detection of disease or health issue

48. Assistive app for autism, Parkinson, Alzheimer diseases

Input: images/video/audio containing sounds/gestures of the user
Output: assistance, helps, recommendations to the user

49. Doctor and medical shop recommendation app

Input: Disease/symptoms and current location of the user, social media, review data
Output: Recommendation of doctors/hospitals and medical shops, route to the locations

50. Walking pattern monitoring for arthritis

Input: Real time video of user walking
Output: Analysis of walking pattern and further recommendation for improvement

Crowd

51. Finding people who are lost

Input: Photo of the lost person and crowd images/videos

Output: Detections of the lost people

52. Head counting application

Input: Photo or video taken from mobile camera

Output: Number of human heads in the image i.e. people count

53. Identifying objectionable persons

Input: Photo or video taken from a mobile or surveillance camera in a highly crowded environment

Output: Detection of the objectionable person in the crowd images

54. Weapon detection from crowded environment

Input: Photo or video taken from a mobile or surveillance camera in a highly crowded environment

Output: Detections of weapons, type and person who carry

55. Identifying people group in a curfew/ section 144

Input: Photo or video taken from a mobile or surveillance camera in a highly crowded environment

Output: Detections of group of people and their counting and further alerting

56. Detecting persons with deviated yoga or dance pattern

Input: Real time video taken from mobile or surveillance camera in a building

Output: people with different pattern of dance or yoga moves differing from the crowd

57. Identifying people with unique outfit/getup

Input: Photo or video taken from a mobile in a highly crowded environment

Output: individuals with unique outfit/makeup/gesture

58. Unusual activity, loitering detection in Mall

Input: Real time video stream from surveillance camera in Malls

Output: Individuals who are loitering in the Mall having random and suspicious waling patterns

59. Detecting smokers in no smoking areas

Input: Real time video stream from surveillance camera

Output: individuals who violate the no-smoking rule in the public/private places

60. Counting animals/birds in a farm land or open area

Input: Real time video stream from drone camera or mobile

Output: number of total animals/birds in a group category wise

Entertainment

61. Generating video from photo Gallery of a mobile

Input: Photos of user from the camera

Output: Video containing the photos presented in an interesting way with animation and music

62. Hands-free mobile control using frontal camera app

Input: Face gestures fed through the frontal camera of a mobile

Output: Actions on the mobile such as clicks, swipe, long press etc

63. Face morphing with Indian cultural face make-ups

Input: Face photo/video taken from the frontal camera of a mobile

Output: Morphed faces with make-up of Indian regional cultures

64. Real-time video player for streaming/playing low resolution videos

Input: Low resolution videos of 144p or 180p

Output: High resolution videos of 720p or 1080p

65. Fast painting style transfer app to selfies and other photos

Input: Photos taken from frontal or back camera

Output: Stylised painting like photo based on different painting styles

66. Singing synchronization app for mixing user voice with music

Input: Audio of song sung by the user

Output: Mixed song with background music with voice from user audio

67. Augmented Reality app for animating mobile videos

Input: Videos taken by the users

Output: Animated videos with animated 3D characters within it

68. Personalized music recommendation app for mobile

Input: song playlist history, likes and dislikes of the user

Output: Song recommendations based on user interest, mood and timing

69. Chatbot for stress buster

Input: User chat comments/questions

Output: Replies comments that will relieve the stress of the user

70. Video summarization app for mobile users

Input: Lengthy video from the user

Output: Short summary video containing interesting segments

Space Research

71. Stars recognition using mobile apps

Input: Sky photos taken from mobile camera

Output: Labelled Stars/star groups on the photos

72. Environment conditions detection using mobile camera apps

Input: Outdoor photos taken from mobile phones

Output: Air pollution level, cloud, lighting information detected automatically

73. Traffic control application using satellite images

Input: Satellite images of roads

Output: Traffic congestion detection results and recommendations

74. Detecting popularity of a business venue using satellite images of parking lot

Input: Satellite images of parking lots

Output: popularity level of that business venue

75. Satellite farming using remote sensing images/ drone images

Input: Satellite images or drone images of farm lands

Output: Monitoring, inventory estimation, yield prediction, strategies & plans for farming

76. Automated drone navigation system

Input: Real time video feed from the drone camera

Output: Navigation actions and real time physical motion to the target locations

77. UGV or Drone detection system for border security

Input: Real time video feed from HQ surveillance cameras

Output: detections of UGV or drones and their locations

78. Location recognition apps from Airplanes

Input: Photos of land taken from airplanes

Output: Recognized places and their information

79. Drone based security system

Input: Real time video stream from drone cameras

Output: Detected objects, people, animals, activities, accidents, intruders etc.

80. 3D reconstruction of a building or land using Drone cameras

Input: Aerial video taken from drone camera

Output: 3D model of the location/buildings

Business

81. Chatbot development for regional languages

Input: Chat commands written in regional languages

Output: Automated responses in regional language

82. Robust face recognition system for loan/insurance fraud prediction

Input: Face photos and related information of a loan applicant

Output: Detection whether specific applicant has committed loan/insurance fraud

83. Question answering system for automated customer relationship management

Input: Questions from customers spoken/written in regional languages

Output: Answers (spoken/written) from the automated system in regional language

84. Face emotion detection for customer relationship management

Input: Real-time video of customer in a services/customer care place

Output: Detections of user emotion such as stress, happy for guidance to the service provide or customer care responder

85. Salient region detection for targeted advertisements placement

Input: Image or streaming video of sports/movie etc.

Output: Location inside video frame where ad will be posted

86. Customer emotion detection for telephony customer care

Input: Real-time audio of the customer care call

Output: Detections of user emotion such as stress, happy for guidance to the customer care responder

87. Product requirement analysis from social media

Input: comments, reviews from users of particular topic or need

Output: Detections of whether particular feature or product is currently needed for the customers

88. Scheduling and planning apps for sales person

Input: Schedule, target, location of the sales person

Output: Reminders, route recommendations, plans for sales execution

89. Mobile app for quick prediction of production time and cost

Input: Requested number of quantity and specification of a product

Output: Production time and cost to make the specific number of products

90. Work monitoring system for surveillance videos in production environment

Input: Real time video feed from surveillance cameras in a product production environment

Output: Detection of events, accidents, people activities, loitering etc

Journalism

91. News article summarization app

Input: News article in text format

Output: Summary of news as a short text

92. News text to video generation app

Input: News article with text and images

Output: Interestingly presented video with news elements, animations and attractive audio

93. Fake news alert app

Input: News article with text and images

Output: Detection results whether article is fake or from trustable source

94. Provocative article detection for safe surfing

Input: News article with text and images

Output: Detection results whether article contain controversial/violent content against religious views/national integrity that will induce violence or riot

95. Finding famous and relevant Tweets of news articles

Input: News article with text and images

Output: Neatly presented famous tweets from celebrities/active twitter users on specific issues that news article deals with

96. Personalized News Recommendation App

Input: News articles, previous history of user, ratings etc

Output: News articles matching interest and history of the user

97. Multisource news summarization for summarizing news on same topic

Input: Multiple news articles dealing with same news

Output: Summary of news content as a short text

98. User emotion detection for news article impact analysis

Input: News article, face images of the user while reading news, history of articles read by user

Output: Prediction of emotions of a user for different articles

99. News popularity detection in social media

Input: News article and its relevant social media feed

Output: Popularity level of a news story

100. News generation from tweets of certain topic

Input: Twitter feed related to certain event or topic

Output: Generated news story related to the famous tweets

Civil Engineering

101. Prediction of Mix design parameters and compressive strength of Concrete Structures

Input: Different materials and their specifications

Output: Mix design parameters and their respective Compressive Strength

102. Real time Monitoring of Corrosion in Reinforced Concrete structure

Input: Images of Corrosion

Output: Predicting the Corrosion

103. Crack Detection in Reinforced Concrete structure

Input: Different type of Crack Images

Output: Predicting the type of crack

104. Remaining life assessment of structures

Input: Different durability assessment data

Output: Predicting of remaining life

105. Estimation of Fixity Factors at Connections in Steel Frame Structures

Input: Strain time history data

Output: Predicting the fixity factors at connection