

PROJECTS WHICH ARE CURRENTLY RELEVANT

Tentative Titles of the projects are given below

Doing projects which are currently useful in the real world are essential components to show your relevance to the world. We will be providing hundreds of project specifications. Each of these projects will have a 2-4 page specification containing background, datasets, Models and architecture etc. That will help the students to get a kickstart for the project.

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

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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

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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. UTM or Drone detection system for border security
Input: Real time video feed from HQ surveillance cameras
Output: detections of UTM 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

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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