



DEPARTMENT OF INFORMATION TECHNOLOGY 2022-23

VISION

Towards providing world class education in Information Technology with societal focus.

MISSION

M1: Empowering students with state of art knowledge and skills to meet global challenges.

M2: To carry out high quality research leading to the creation and commercialization of intellectual property.

M3 : To provide a comprehensive quality infrastructure committed to empower students to contribute technological and social development towards the progress of society.

TECHNICAL E-MAGAZINE

INDEX

1. Fabric Defect Detection
2. Fake News Detection using Deep Learning Algorithm
3. Song Popularity Prediction using Machine Learning and Audio Fingerprinting
4. Covid-19 Detection using Voice Analysis
5. Retinal Vessel Segmentation Using Genetic U-net
6. Automatic Multilingual Multiple Choice Question Generation
7. Connectify : P2P Offline Data sharing using BLE
8. Digital Card System
9. GitHub Recommendation System
10. Deep Lightning Network for Object Detection in Low Light Environment
11. Multilingual Food Detection Using Speech and Image Recognition
12. Real Time Facial Emotion Recognition using Convolutional Neural Network
13. Plant Disease Detection using Deep Learning and IOT
14. News Summarization and Narration
15. Assessment of Reading and Writing Difficulties in Person with Special Learning Disability
16. Emotion Detection using Speech and Text Recognition by Analyzing Spectrogram and Keywords

1

Rohan Khandkole, Manoj Kumar Rewar, Rohit Kumar,
Harish Kumar Bajiya

ABSTRACT

Fabric defect detection is a part of fabric quality control in textile production. In textile companies, the detection of defects and unacceptable areas of fabrics at the quality control stage has great importance for apparel production, although it is also a post-manufacturing operation for weaving and knitting mills.

The fabric defects may cause 45-65% incurred loss in sale prices. Besides, approximately 85% of the product rejects in the apparel industry are related with fabric defects.

CNN Based Approach

A neural network type called a convolutional neural network, or CNN or ConvNet, is particularly adept at processing input with a grid-like architecture, like an image.

YOLOv5 Based Approach

YOLO (You Only Look Once) is a popular object detection and image segmentation model developed by Joseph Redmon and Ali Farhadi at the University of Washington. The first version of YOLO was released in 2015 and quickly gained popularity due to its high speed and accuracy.

“

Title :
Fabric Defect Detection

”

Guide :
Dr. Sangeeta Jadhav

ABSTRACT

Fake News are increasing heavily because of social media. The ease of access, affordability and widespread audience has made these platforms a perfect choice to reach the world. The objectives of the project is to implement machine learning algorithms to detect fake news and give highly accurate result whether the news is fake or real.

The objectives of the project is to implement machine learning algorithms to detect fake news and give highly accurate result whether the news is fake or real.

Title:

Fake News Detection using
Deep Learning Algorithm

Guide :

Prof. D.G. Auradkar

“

Title :
Song Popularity Prediction
using Machine Learning and
Audio Fingerprinting

”

Guide :
Dr. Rahul Desai

3

Gaurav Yadav, Shambhavi Choudhary, Shashank Singh,
Sumit Dahiya

ABSTRACT

Music is a constantly growing field that has existed for millennia as a method of relaxation and enjoyment. Over the past few decades, the music industry and sector have expanded significantly, and ongoing efforts are made to create hit songs in order to increase revenue.

We chose to carry out more research by focusing on the following three issues: What factors have the biggest impact on a song's success, are their specific traits for hit songs, and can the success of newer songs even be predicted by the success of older ones? Machine learning prediction models and fingerprinting techniques can easily anticipate a song's popularity. We offer a model that forecasts a song's likelihood of becoming a hit. In a remarkably short period of time, musical trends and popularity are constantly shifting. . The genre, chords, danceability, tempo, artist, play counts, and other elements are only a

few of the many variables that affect how well-liked and successful a song is. The success of a song can be somewhat guaranteed if music producers can learn more about the factors that determine its success. This knowledge will enable them to create songs that appeal to the audience. For record labels and producers, a system like this one that can gauge a song's popularity based on its characteristics would be helpful. The preceding knowledge might be helpful for marketing plans, promotions, etc. Various streaming services, on the one hand, highlight elements like play counts and download numbers. With the help of a sizable data set and acoustic information and fingerprinting, this study attempts to provide a more thorough understanding and deeper insight into predicting music popularity.

ABSTRACT

The Covid-19 pandemic represents one of the greatest global health emergencies of the last few decades with indelible consequences for all societies throughout the world. When it was declared as global pandemic till then only around 139 million cases of covid-19 were reported with a death count of around 3.5 million people around the world. Smart healthcare technologies and Artificial Intelligence algorithms constitute promising solutions useful not only for the monitoring of patient care but also in order to support the early diagnosis, prevention and evaluation of Covid-19 in a faster and more accurate way. To identify Coronavirus disease (COVID-19) cases efficiently, affordably, and at scale, recent work has shown how audio (including cough, breathing and voice) based approaches can be used for testing. However, there is a lack of exploration of how biases and methodological

decisions impact these tools' performance in practice. The prominent symptoms of COVID-19 include cough and breathing difficulties. We foresee those respiratory sounds, when analyzed using machine learning techniques, can provide useful insights, enabling the design of a diagnostic tool.

Title :
Covid-19 Detection using
Voice Analysis

Guide :
Dr. Rahul Desai

ABSTRACT

The process of partitioning a digital image into multiple segments or set of pixels also known as image objects is Image Segmentation. Our goal of segmentation is to simplify and/or change the representation of an image into something that is more meaningful and easier to analyze. Retinal imaging is a common clinical procedure used to record a visualization of the retina. Segmentation of blood vessels in retinal images is used for the early diagnosis of retinal diseases such as hypertension, diabetes, and glaucoma. The segmentation of blood vessels is an important pre-processing step for the early detection of retinal diseases. Deep learning techniques, particularly the U-Net architecture, have shown promising results in this area. However, optimizing the architecture and hyperparameters of the U-Net for retinal image segmentation remains a challenging task.

U-net is an image segmentation technique developed mainly for image segmentation tasks. These traits provide U-net with a high utility within the medical imaging community and have resulted in extensive adoption of U-net as the primary tool for segmentation tasks in medical imaging.

The proposed approach, called Genetic U-Net, uses a genetic algorithm to optimize the convolutional filter sizes, number of layers, and the number of filters at each layer of the U-Net. The genetic algorithm generates a population of U-Net architectures, evaluates their fitness based on their performance on the training dataset, and selects the best-performing architectures for the next generation. This process is repeated until the optimal architecture is found. We evaluate the proposed approach on two publicly available retinal image datasets: the DRIVE and STARE datasets.

Title :
Retinal Vessel Segmentation
Using Genetic U-net

Guide :
Dr. Ashwini Sapkal

ABSTRACT

E-learning has been gaining trend especially after the covid pandemic which led to closing down of schools and colleges . With rising E-learning platforms and MOOC courses, the education field is slowly being digitized .When it comes to online teaching and evaluation , MCQs are time efficient , easy to grade and give immediate feedback to the student. However, manually creating multiple choice type questions which are not only grammatically correct but are also good quality questions that test thorough understanding of concepts is a difficult task. Automating the process of multiple choice type questions shall help reduce the obstacles that slow down the educational process. The model can be expanded to create a language agnostic model , thereby creating a multilingual model . Multilingual automatic MCQ generation has the potential to be a valuable tool for educators and test developers , as it can help create

assessments that are more accessible to students who speak different languages .

The proposed model in the project will mainly work on two levels -

- The low level module which uses the LSTM model which will perform the basic understanding of language . Each language's word embeddings and low-level language understanding LSTMs are unique.

- The high level module which is built over the low level module will perform higher level gathering of information and more specific linguistic understanding .It consists of a transformer model is designed to handle higher-level information aggregation that needs a larger model.

MCQs are becoming a fundamental educational tool and are being widely used for evaluation .

Title :

Automatic Multilingual
Multiple Choice Question
Generation

Guide :

Dr. Ashwini Sapkal

ABSTRACT

Using Android Nearby Connections, this platform allows users to connect to all nearby devices by forming a localized mesh network. This enables the direct transfer of texts from device to device via m to n peer to peer, as well as messages to different clusters, without the use of an internet connection.

Each user's device keeps a localized ledger of all messages sent and received, as well as the platform instance to which it is directly connected via Android Nearby. Using Android Nearby Connections in conjunction with this decentralized, distributed ledger, messages can travel between isolated networks when users join one mesh network after leaving another.

“

Title :
Connectify: P2P Offline Data
Sharing using BLE

”

Guide :

Prof. Sandeep Samleti

ABSTRACT

In today's digital age, sending a personalized message has never been easier. This is the age of digital media. All the traditional devices are being replaced by their digital counterparts. One such example is of digital credit/debit cards. There are lots of business owners who don't get a chance to prove themselves because of the complications involved in taking part in a physical card. In this project we will track the live location of the user and in this they also can customize cards according to their need.

A physical card is a printed card that holds all your contact details, such as your email address, phone number, company website and social media handles. They are often shared with others to give recipients quick and concise access to your contact details. Printed business cards are designed to reflect your company branding and to speak favourably of your business.

It will also track the location of business site and details of the

new offers and stock alert according to the business owner and it can be customized for each person. So, this project is aimed at developing an Online Digital Card System in which all the mentioned above problems will be eliminated. All that the user will need is a Smart device with internet connectivity and of course some amount of skill.

Apart from that, the project is also aimed at providing an online digital card wherein all the cards submitted on site will be available for later viewing, downloading purposes. The project aims at providing a common place where all the people can generate their own business card without facing any problems. With a variety of templates and customization options and multiple functionalities, anyone can create a professional-cards and it can help to grow their business.

Title :
Digital Card System

Guide :
Dr. Aparna Joshi

ABSTRACT

The proposed framework for the GitHub recommendation system involves combining two prediction models: item-based collaborative filtering and content-based filtering. Item-based collaborative filtering is a method of making recommendations by finding items similar to those that a user has already rated highly. This is done by analyzing the ratings of other users in the system and finding items that are highly correlated with the items that the user has rated highly. However, traditional collaborative filtering algorithms can face issues such as scalability, sparsity, and cold start, which can limit the accuracy of the recommendations. To overcome these issues, the proposed framework combines item-based collaborative filtering with content-based filtering. Content-based filtering is a method of making recommendations by analyzing the attributes of the items themselves, rather than relying solely on the

ratings of other users. In this approach, the characteristics of the items are compared to the user's preferences to make recommendations.

By combining these two methods, the proposed framework can improve the accuracy of the recommendations by leveraging both user ratings and item attributes. This approach can also reduce the impact of issues such as sparsity and cold start, as the content-based filtering can provide recommendations even for new or rare items that do not have many ratings from other users.

Overall, the proposed framework for the GitHub recommendation system provides a more robust and accurate approach to personalized recommendations, by leveraging both collaborative filtering and content-based filtering techniques.

Title :
Github Recommendation
System

Guide :
Prof. Vaishali Ingale

ABSTRACT

Low light photographs are those that have low visuals, poor contrast, and bad quality since they were captured in low light. Although many computers vision and multimedia systems are built for high-quality images, low-light image enhancement algorithms have been developed to enhance the visual quality of low-light photos. To improve the low-light image, a unique Deep Lighting Network (DLN) that takes use of current advancements in Convolutional Neural Networks is used (CNNs). The provided DLN is made up of different LBP (lightening back-projection) blocks. In order to learn the normal light estimation of the image, this LBP typically performs the lightening and darkening processes continually. Moreover, we have Feature Aggregation (FA) blocks, which are created when the outcomes of various LBPs are combined. Also, CNN is made up of different convolutional layers, and each layer combines trainable filters to express

the pattern of the input images. Back projection is also employed in the super resolution (SR) job, which enables the prediction of one SR image from numerous low resolution (LR) images. Shallow feature extraction, LBP, and the illuminating process are the three components of DLN. Two convolutional layers of shallow feature extraction are applied to images. There are sixty-four 3×3 filter on each layer. After that, it goes through an illuminating procedure that uses two convolutional layers to estimate the residual in the NL picture using the LBP result. Lastly, the residual with the gamma interaction factor is added to improve the LL image. The remaining portion of the image contains the LBP and FA block information. In order to train our model using these dataset photographs and to make the darker image appear brighter and clearer, we have gathered various dataset images of objects shot in low light.

“
Title:
Deep Lightning Network for
Object Detection in Low
Light Environment

”
Guide :
Prof. Vaishali Ingale

ABSTRACT

Our team has developed a Food Detector that can understand and translate speech from one language to another, allowing users to communicate with others who speak a different language. In addition, the device can analyse images to detect any written language present and translate it on the spot. We collected recordings of eight regional languages, as well as Hindi and English, to create a corpus for our system. To recognize and translate text from images, we will be using OpenCV with Tesseract and Easy OCR libraries, and then converting the text into speech. We segment the transcripts into sentences and align them with both the source-language audio and target-language translations, utilising a dual encoder architecture that jointly performs Automatic Speech Recognition (ASR) and Speech Translation (ST).

During testing, we found that our code successfully translated handwritten text into text and then converted into speech.

“
Title :
Multilingual Food Detection
Using Speech and Image
Recognition

”
Guide :
Dr. Gajanan Walunjkar

ABSTRACT

Forecasting about Indian market has always been interesting and topic of discussion among analyst and researchers. With the arrival of machine learning and artificial intelligence the race is now becoming the competition with best algorithms to be used and give investors more profit. In past years prediction was only based on experience and daily headlines of business newspapers but now it depends on various international, national and political economic factors and the sentiments and reaction of people over the issues. With the growing power of social media, the game in market over this also changed now with the help of sentiment analysis over social media we can determine the mood of investors over the news. In the present scenarios you can divide two categories for the prediction strategies one is the time series analysis of stocks and the second is artificial intelligence property over the market.

Tensor-flow framework will be used for model training and testing the data. Currently we are using our own CNN model with 10 convolutional layers, 6 activation layers, 3 dropout layers, 2 pooling layers and 3 dense layers. The Base model is providing a decent accuracy of around 83%. We made further changes in the model by changing the architecture to VGGNet which is an advanced CNN architecture. The accuracy increased by 2% on this dataset. Further we will be implementing modified CNN with attention mechanisms on an unlabelled dataset with other classification techniques that will improve the model's accuracy. Our future work will be to increase the accuracy of the model, so that it becomes easy for the interviewer to judge a candidate and adjust the interview according to the scenario.

“

Title :
Real Time Facial Emotion
Recognition using
Convolutional Neural
Network

”

Guide :

Prof. Yuvraj Narayan Gholap

ABSTRACT

Plant diseases are one of the major concerns in agriculture, leading to huge losses in crop production and posing a significant threat to global food security. Early detection and prevention of plant diseases are critical for controlling their spread and minimizing crop losses. Traditional methods of disease detection involve visual inspection of plants by trained professionals, which can be time-consuming and often result in inaccurate diagnoses. Recent advances in deep learning techniques, specifically Convolutional Neural Networks (CNNs), have shown promising results in detecting plant diseases using image analysis.

In this study, we study a deep learning-based system for plant disease detection using CNNs. The system consists of two main components: image acquisition and analysis. The image acquisition component involves capturing high-quality images of plants using digital cameras or mobile

devices. The image analysis component involves processing the images using a pre-trained CNN model to identify the presence of diseases.

We evaluate the proposed system using a publicly available dataset of plant images and compare its performance with existing state-of-the-art methods. Our results demonstrate that the proposed system achieves high accuracy in identifying various types of plant diseases, outperforming existing methods in terms of both speed and accuracy.

The proposed system has several potential applications in agriculture, including early detection of plant diseases, monitoring plant health, and improving crop yields. The system can be deployed in a variety of settings, including greenhouses, farms, and nurseries. The use of deep learning techniques in plant disease detection offers a promising avenue for accurate and efficient detection of diseases, providing farmers with valuable information that can help them take timely action to prevent crop losses.

“
Title :
Plant Disease Detection
using Deep Learning and IOT

”

Guide :
Prof. Sandeep Samleti

ABSTRACT

Due to the abundance of information available today, keeping up with all of the major events taking place across the world has grown to be very challenging. People now have a very difficult time finding relevant news because of the expanding number of news sources, which has led to information overload. The goal of this project is to create an application that will provide people with brief, crisp, and exact news with narration by extracting and summarizing news pieces from numerous sources. It seeks to provide people with a personalized experience, allowing them to select which topics to follow. People can listen to news summaries just as they listen to songs, while traveling or doing their work.

We are utilizing a state-of-the-art algorithm for abstractive text summarization in this project. Extractive and abstractive text summarization are the two main categories of text summarization

are the two main categories of text summarization techniques. Using an extractive approach, you select the most crucial lines and phases and combine them to produce a summary. Using deep learning, the abstractive approach introduces new words and phrases that are distinct from those found in the original document.

We will be using NaturalSpeech for building a model to narrate the news to people.

“
Title :
News Summarization and
Narration

”

Guide :
Prof. Rupali Bagate

ABSTRACT

A learning disability is a neurologically based processing issue caused by "faulty" circuitry in the cortex. "Specific learning disabilities" refers to a diverse range of conditions where there is a deficit in processing language, whether spoken or written; these conditions include perceptual difficulties, dyslexia, dysgraphia, dyscalculia, dyspraxia, and developmental aphasia; they may present themselves as difficulty understanding, speaking, reading, writing, spelling, or performing mathematical calculations; (RPwD Act, 2016). Learning difficulties, particularly dyslexia and dysgraphia, are quite typical in educational settings across the world. When no other biological or socio-cultural deprivations exist, it is characterised by difficulties reading at an age-appropriate level. These kids struggle to understand word and letter patterns when they are presented visually. They struggle greatly with word, spelling,

and text understanding decoding speed and correctness. They struggle with accurately recognizing the written word, while having intact phonetics and semantics, and this causes dysgraphia. Therefore, they frequently employ compensating techniques like as replacement, mirror writing, reversals, omissions, and inversions as well as imprecise typefaces and improper construction. We aim to create A hybrid mobile application for analysing and profiling different learning capacities in students to detect specific learning disabilities using machine learning and computer vision techniques to automate medically approved tests and generate error reports using a variety of examinations/tests that include eyeball tracking, handwriting analysis, logical test, and speech evaluation. Remedies and solutions for different learning incapability are aggregated over the internet through Google Search and YouTube API from authentic sources.

“

Title :
Assessment of Reading and
Writing Difficulties in Person
with Special Learning
Disability

”

Guide :

Dr. Aparna Joshi

ABSTRACT

This project is a multidisciplinary effort to develop an automated feedback system that can provide feedback to users based on audio, text, and video inputs provided by others. The project mainly focuses to enhance the quality of feedback provided to users in E-commerce domain.

The system is designed to utilize various machine learning techniques to analyze and interpret audio, text, and video inputs provided by users. It then generates feedback that is tailored into different segments ranging from very good to very bad Product. It is aiming to be a 5-level based feedback to provide good understanding about the product.

Whenever we purchase a product from an e-commerce website we have to through a long and not so interesting process of filling various forms and checkboxes. So here we automate this process where we simply have to record a video of reviewing the product and the feedback is

automatically generated from it with a short keywords summary. Also, we can provide a text review which can be used to provide feedback in form of rating.

The project has significant potential in improving the quality of products. As this type of feedback is much transparent people will tend to buy better products and bad products gets reduced in market.

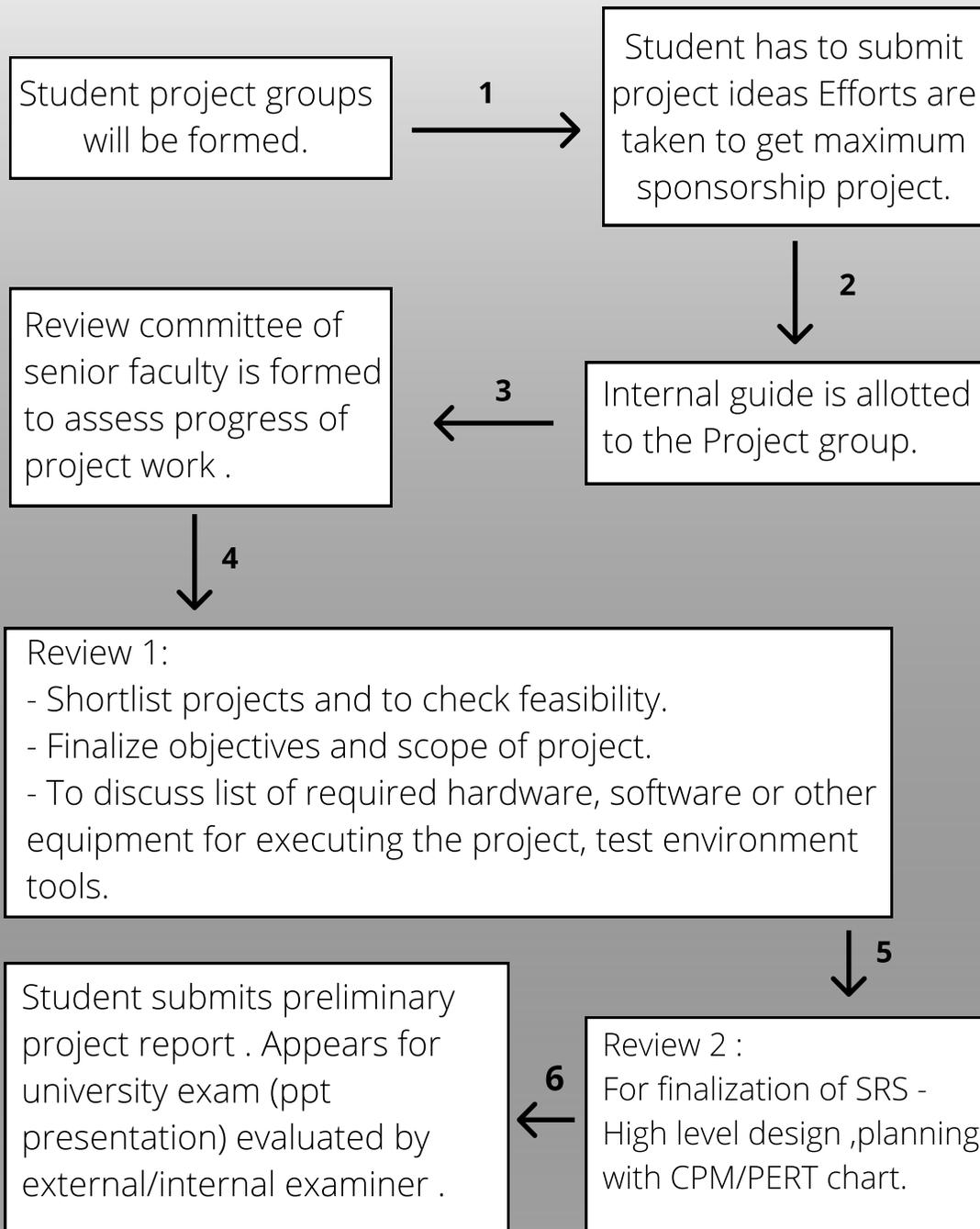
The feedback generation project is a complex and challenging task that requires the collaboration of experts in various domains such as machine learning, natural language processing, and audio and video processing. However, the potential benefits of such a system are enormous, and it has the potential to revolutionize the way feedback is provided in various fields.

“
Title :
Emotion Detection using
Speech and Text Recognition
by Analyzing Spectrogram
and Keywords
”

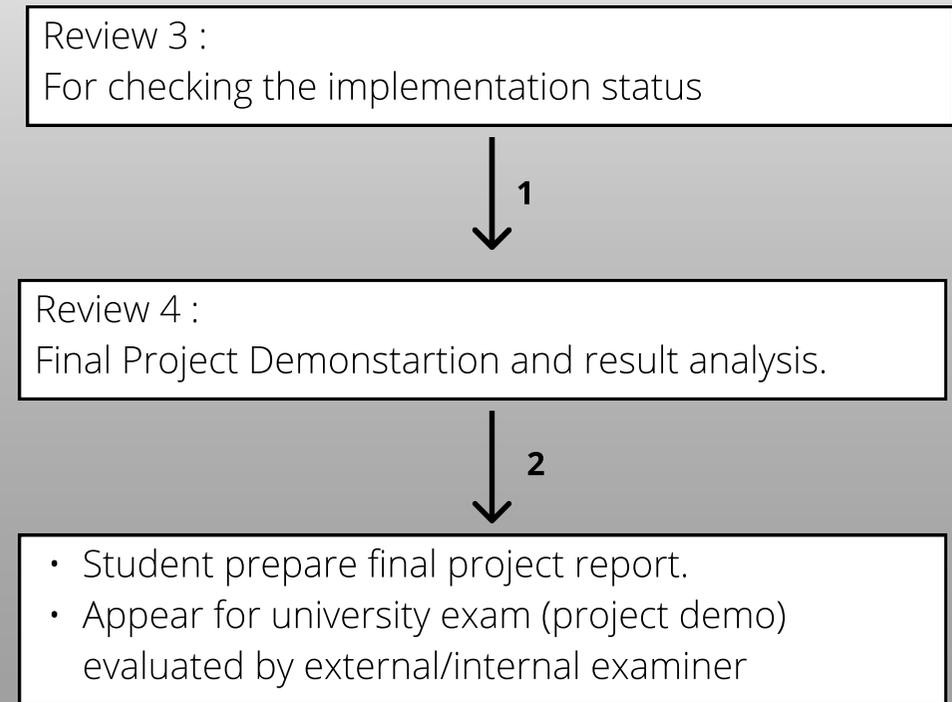
Guide :
Dr. Dipika Birari

Processes related to project identification, allotment, continuous monitoring, and evaluation

SEMESTER 1



SEMESTER 2



THANKS.



| | |
|---------------------------------|----------------------------|
| Dr(Mrs)Sangeeta D Jadhav | HOD & Professor |
| Mr D G Auradkar | Associate Professor |
| Dr Rahul Desai | Associate Professor |
| Dr(Mrs)Ashwini Sapkal | Associate Professor |
| Ms Vaishali Ingale | Assistant Professor |
| Mrs Geeta Patil | Assistant Professor |
| Dr G M Walunjkar | Assistant Professor |
| Mr Yuvraj Gholap | Assistant Professor |
| Mr Sandeep Samleti | Assistant Professor |
| Mrs Rupali Bagate | Assistant Professor |
| Dr(Mrs) Aparna S Joshi | Assistant Professor |
| Dr(Ms) Dipika Birari | Assistant Professor |
| Ms Jyoti Taralkar | Computer Programmer |
| Mr Sonawane Rohan Suhas | Lab. Assistant |
| Ms Shital Omkar Suvarnakar | Lab. Assistant |
| Mr Suryakant Kenjale | Lab. Assistant |
| Mr Arbaaz Pathan | Lab. Assistant |
| Ms Pratiksha Nanavare | Lab. Assistant |