Ver	Reason for change	Minor/Major	Ver	Reason for Change	Minor/Major
0	Obj. rewriting@zeroth	Major	1	correlation change@zeroth	Minor
1	Obj. rewriting@zeroth	Major	1	correlation change@zeroth	Minor

Department of Computer Sc. & Engg, Govt. Engg. College – Thrissur
PROJECT(P1) IDEA RESERVATION
2022-2023 ODD

1. **Program:** B.Tech.in Computer Sc. & engineering **Batch:** 2019 Adm.

2. **Team Members:** as many entries as in your group, max. 4
   Name of Student1 : Devi Krishna M K Uni. Reg. No: TCR19CS026
   Name of Student2 : Maria Viji George Uni. Reg. No: TCR19CS039
   Name of Student3 : Navneeth Variar Uni. Reg. No: TCR19CS047
   Name of Student2 : Niranjan Neelakantan Uni. Reg. No: TCR19CS049

3. **Team leader:** Name of Student1 : Niranjan Neelakantan Uni. Reg. No: TCR19CS049

4. **Guided by:** Mrs. Princy Ann Thomas, Assistant Professor

5. **Broad area:** Machine Learning

6. **Sub area:** Natural Language Processing

7. **Project idea:** Automated Malayalam Descriptive Answer Evaluation System for Hand-written texts.

8. **Objectives of project work:**

   O1: To automate the task of evaluation of hand-written Malayalam answer scripts.

   O2: To explore different techniques to improve the accuracy of Malayalam handwriting recognition algorithms.

   O3: To improve the scope and usability of the existing automated evaluation systems.

   O4: To increase the familiarity with the concepts of optical character recognition and machine learning techniques.

   O5: To design and implement a prototype by efficiently utilising the diverse skills of the team, using concepts of project management and software development.

9. **Correlation to course outcomes:**

   CSD 415.CO1: Model and solve real world problems by applying knowledge across domains Cognitive knowledge level: Apply)

   CSD 415.CO2: Develop products, processes or technologies for sustainable and socially relevant applications (Cognitive knowledge level: Apply).

   CSD 415.CO3: Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks (Cognitive knowledge level: Apply)

   CSD 415.CO4: Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms (Cognitive knowledge level: Apply)

CSD 415.CO5: Identify technology/research gaps and propose innovative/creative solutions (Cognitive knowledge level: Analyze)

CSD 415.CO6: Organize and communicate technical and scientific findings effectively in written and oral forms (Cognitive knowledge level: Apply)

	CO1	CO2	Justification
O1	3	3	CO1: Solve real world problem CO2: Social relevance
O2			CO1: CO2:
O3	2	1	CO1: Solve real world problem CO2: Social relevance
O4			CO1: CO2:
O5	2	3	CO1: individual tasks CO2: execute tasks

	CO3	CO4	Justification
O1			CO3: CO4:
O2	2	2	CO3: CO4:
O3		2	CO3: CO4: execute tasks
O4	2	3	CO3: individual tasks CO4: execute tasks
O5	2	3	CO3: individual tasks CO4: execute tasks

	CO5	CO6	Justification
O1	1		CO5: propose solutions CO6:
O2	3		CO5: propose solutions CO6:
O3			CO5: CO6:
O4	1	1	CO5: propose solutions CO6: communicate findings
O5	1	1	CO5: propose solutions CO6: communicate findings

10. **Important Statistics about project work**

Date from which working for this idea:	14-09-22	
Date on which guide approved this idea:	23-09-22	
Classification: {Internal}/{External}/{Internship}/{new idea}/{variant of an idea}	Academic Research internal variant of an idea	
Work related to: Earlier work by group RESEARCH INTEREST of Guide Guide's new TOPIC of interest NOW Earlier work in other institution - new NOW	TOPIC of interest of guide Machine Learning Continuous authentication using ML Continuous authentication using ML	
Source of Idea:	{Student}/{Guide}/{BOTH}	

11. **Related works:**

(a) Subjective Answers Evaluation Using Machine Learning and Natural Language Processing - [1]:
The paper proposes a novel approach using different NLP techniques like Wordnet,Word2vec,cosine similarity to evaluate subjective answers automatically.Solution statements and keyword matching are used to evaluate the answers.ML model is trained to predict the scores.

(b) Proposed method to Malayalam Handwritten Character Recognition using Residual Network enhanced by multi-scaled features - [2]:A novel hybrid approach for recognizing the characters of malayalam handwritten texts is proposed in the paper.By combining the statistical features and structural features of the characters,more accuracy is obtained in malayalam character recognition. The proposed system has claimed to have obtained around 97 percentage accuracy in malayalam character recognition.

(c) Towards Automated Evaluation of Handwritten Assessments - [3]:

The paper introduces a framework that integrates ideas from information retrieval,NLP and feature based keyword spotting to automate the evaluation of short descriptive answers.Along with keywords from textual reference,semantically relevant keywords to that in textual reference is obtained using information retrieval and various Natural Language Processing Techniques.The added feature of spotting semantically relevant keywords has resulted in the increased accuracy of score prediction.

12. **Work plan:**

Action plan				
Sl. No.	**Activity**	**Date**	**Signature of guide**	**Remarks**
1	Project course activity starting	12-09-22		
2	Date of fixing project topic,title	16-09-22		
3	Date of Zeroth step valuation	20-09-22		
4	Date of completion of SRS	10-10-22		
5	Date of First step valuation	18-10-22		
6	Dt. of finishing work-plan, task allocation	25-10-22		
7	Date of completion of conceptual design	01-11-22		
8	Date of completion of methodologies	01-11-22		
9	Dt. of completion of project synopsis	05-11-22		
10	Date of Interim evaluation	08-11-22		
11	Dt. of completion of *rapid prototyping*	20-11-22		
12	Dt. of completion of project feasibility study	29-11-22		
13	Date of completion of funding proposal	02-12-22		
14	Date of Endsem evaluation	06-12-22		
15	Date of completion of report review	13-12-22		
16	Date of approval by coordinators	19-12-22		

13. **Brief description of work:**

Datasets and existing trained models for malayalam Handwritten text recognition are found.Existing auto-evaluation methods are studied in detail and the best possible evaluation methods are applied to evaluate handwritten answer sheets in malayalam language. Parallely technologies required for the same are learnt and active collaboration with technical experts and mentors are done.

14. **Facilities to be provided by department:**

- Uninterrupted high speed wi-fi connection.
- Lab space to work
- High end machine capable to train ML models with large datasets.

15. **References:**

[1] Abdul Rehman Javed Natalia Kryvinska Shahab S. Band Muhammad Farrukh Bashir, Hamza Arshad. Subjective answers evaluation using machine learning and natural language processing. *IEEE Access*, 9(25), November 2021.

[2] Chandran Saravanan Samatha P Salim, Ajay James. Proposed method to malayalam handwritten character recognition using residual network enhanced by multi-scaled features. 2019.

[3] Jawahar C.V Vijay Rowtula, Subba Reddy Oota. Towards automated evaluation of handwritten assessments, 2019.

16. **Approval note of Guide:**
This work is a variant of existing research done in the field of automated marking of English answer scripts. The project will accomplish automated marking for malayalam answer scripts. The work will begin with small valuation tasks like one word answers and dictations. The prototype will be implemented for this task. This work is relevant for online education and simplification of the existing valuation process.

Date of approval:

Signature of Student **Signature of Guide**
email-id: (niranjan2neelakantan@gmail.com) **email-id:** princyannthomas@gectcr.ac.in

Note:- Use these e-mail ids for communication. Communication send to any other address is invalid or is not part of seminar correspondence.