Project Design Phase-1

Proposed Solution

Date	12 October 2022
Team Id	PNT2022TMID25508
Project Name	A Novel Method For Hand Written Digital Recognition
Maximum Marks	2 Marks

Proposed Solution :

Project team shall fill the following information in proposed solution

S.No	Parameter	Description
1.	Problem statement (problem to be solved)	The total world is working with the various problems of the machine learning.The goal of the machine learning is to factorize and to manipulate the real life data and the real life part of the human interaction or complex ideas or the problems in the real life.The most curious of those is Handwritten Character Recognition because it is the building block of the human certified and the classification interaction between other humans. So, the goal was to create an appropriate algorithm that can give the output of the handwritten character by taking just a picture of that character. If one asks about Image processing then this problem can't be solved because there can be a lot of noises in that taken image which can't be controlled by human.

2.	Idea/solution description	Handwriting recognition, also known as handwriting OCR or cursive OCR, is a subfield of OCR technology that translates handwritten letters to corresponding digital text or commands in real-time. To perform this task, these systems benefit from pattern matching to identify various styles of handwritten letters
3.	Novelty/uniqueness	The HWR domain, as defined for this paper's proposed benchmark, consistsof two high-level tasks: (1) text transcription and (2) style recognition. Thetranscription task involves an agent taking a digital image of a handwrittendocument as input and processing it to recognize the individual characters toproduce a plaintext output. The style recognition task involves the agent identi-fying known and unknown aspects of visual appearance for both the text (e.g.,how are individual characters stylized?) and page (i.e., what does the page looklike holistically?). Two subtasks for style recognition are considered: (2a) writeridentification and (2b) overall document appearance identification (ODAI). Theformer involves multi-class classification to distinguish between individual knownwriters and new writers unseen at training time, while the latter involves multi-class classification to distinguish between known global appearances of handwrit-ten documents and appearances unseen at training time.
4.	Social impact/customer satisfication	Today, there is an increasing demand of efficient archival and retrieval methods for online handwritten data. For such tasks, text categorization is of particular interest. The textual data available in online documents can be extracted through online handwriting recognition; however, this process produces errors in the resulting text. This work reports experiments on the categorization of online handwritten documents based on their textual contents.
5.	Business Model(Revenue Model)	Work related to HWR with novelty can be found in thefields of machine learning and computer vision. There is a strong foundationin deep learning-based approaches to HWR, which have yielded good perfor-mance in closed world data set evaluations. State-of-the-art approaches for di-verse document sets [27,20] are based on the Convolutional Recurrent NeuralNetwork (CRNN) [23] in combination with a Connectionist Temporal Classifi-cation (CTC) loss [9].Beyond anomaly detection [18], machine learning work on classifiers hasstarted to look at other ways in which novelty can be handled. Promising workin this direction relies on statistical modeling using extreme value theory, whichmore accurately accounts for the samples in the tails of distributions, which isconsequential for decision

		boundaries in classifiers [2,29,17]. HWR in human bio-metrics is a mature area of research, having demonstrated that reliable person-specific features exist and can be learned for different languages .
6.	Scalability of the solution	This paper introduced an agent-centric approach to handling novelty in theHWR domain. This domain is attractive for the study of novelty, as it consistsof a key challenge problem within AI: reading in a more human-like way. TheHWR domain with novelty was formalized, an evaluation protocol with bench-mark data was introduced, and comprehensive results from a baseline agent 14 D. Prijatelj et al.were presented to provide the research community with a starting point to buildupon. Beyond incremental improvements in transcription performance and stylerecognition in the presence of novelty, we suggest that adaptation via incremen-tal learning is the next step. Agents that can properly react to and managenovelty, as opposed to merely detecting novelty, will perform better on the taskover time. With additions to the evaluation protocol supporting this, we expect anew class of agents to appear for a number of document processing application