PROJECTDESIGNPHASE-II

SOLUTION REQUIREMENTS(FUNCTIONAL&NONFUNCTIONAL)

Date	10October2022
TeamID	PNT2022TMID44901
ProjectName	A novel method for handwritten digitrecognition
MaximumMarks	4Marks

FUNCTIONALREQUIREMENTS:

Followingarethefunctionalrequirementsoftheproposedsolution.

FR No.	Functionalrequirement	SubRequirement(Story/Sub-Task)
FR-1	IMAGEDATA	Handwrittendigitrecognitionreferstoacomputer'scapacitytoidentifyhuman handwritten digits from a variety of sources, such asphotographs, documents, touch screens, etc., and categorise themintotenestablishedclassifications(0-9). In the realm of deep learning, this has been the subject of countlessstudies.
FR-2	WEBSITE	Webhostingmakesthecode,graphics,andotheritemsthatmakeupawebsite accessible online. A server hosts every website you've evervisited.Thetype of hosting determines how much space is allotted to a website on aserver.Shared,dedicated,VPS,andresellerhostingarethefourbasicvarieties.
FR-3	DIGITCLASSIFIERMODEL	To train a convolutional network to predict the digit from an image,use the MNIST database of handwritten digits get the training andvalidationdatafirst.
FR-4	CLOUD	The cloud offers a range of IT services, including virtual storage,networking,servers,databases,andapplications.InplainEnglish, cloud computing is described asa virtual platform that enablesunlimitedstorageand accesstoyour dataovertheinternet.
FR-5	MNISTDATASET	The abbreviationMNIST stands for Modified National Institute ofStandardsandTechnologydataset.Itisacollectionof60,000tiny squaregrayscalephotographs,eachmeasuring28by28,comprisinghandwrittensingledigitsbetween0and9.

NON-FUNCTIONALREQUIREMENTS:

Followingarethenon-functionalrequirementsoftheproposedsolution.

FRNo	Non-FunctionalRequirement	Description
NFR-1	**Usability**	One of the very significant problems in patternrecognition applications is the recognition ofhandwritten characters. Applications for digitrecognitionincludefillingoutforms,processing bankchecks,andsortingmail.
NFR-2	**Security**	1)The systemgeneratesathoroughdescription of the instantiationparameters,whichmighreveal information like the writing style, inadditiontoacategorizationofthedigit.2)The generative models are capable ofsegmentationdrivenbyrecognition. 3)Theprocedure uses arelatively.
NFR-3	**Reliability**	The samples are used by the neural network toautomaticallydeducerules forreadinghandwritten digits. Furthermore, the networkmay learn more about handwriting and henceenhanceitsaccuracyby increasingthequantityoftraininginstances. Numeroustechniquesandalgorithms,suchasDeepLearning/CNN,SVM,GaussianNaive Bayes,KNN,DecisionTrees,Random Forests,etc.,canbeusedtorecognizehandwrittennumbers.
NFR-4	**Accuracy**	Withtypedtextinhigh-qualityphotos,opticalcharacter recognition (OCR) technology offersaccuracy rates of greater than 99%. However,variances in spacing, abnormalities inhandwriting,andthevarietyofhumanwritingstyles resultinlessprecisecharacter identification.
NFR-5	**Availability**	Availableformobileandwebbrowsers

NFR-6	**Scalability**	The scalability in the task ofhandwritten digit recognition using aclassifier has a great importance and itmakes use of online handwritingrecognition on computer tablets ,recognizingzipcodesonmailforpostalmail sorting , processing bank checkamountsnumericentriesinformsfilledupmanually(for exampletax forms)andsoon