ReviewForm3

JournalName:	JournalofEngineeringResearchandReports
ManuscriptNumber:	**Ms_JERR_124333**
TitleoftheManuscript:	**OptimizingTouchlessFingerprintIdentification:AMachineLearningApproachtoModellingandPerformanceEvaluation**
TypeoftheArticle	**OriginalResearchArticle**

PART1: ReviewComments

CompulsoryREVISIONcomments	**Reviewer'scomment**	**Author'sFeedback***(Pleasecorrectthemanuscriptandhighlightthatpart inthemanuscript.Itismandatorythatauthorsshouldwritehis/herfeedback here)*
Pleasewritea fewsentencesregardingtheimportance ofthismanuscriptfor thescientificcommunity.Whydo youlike (ordislike)thismanuscript?Aminimumof 3-4 sentencesmayberequiredforthispart.	Thismanuscriptpresentsasignificantcontribution tothescientificcommunity, particularlyinthefieldsof machinelearning,biometric security,andmobiletechnologies. ThestudyexplorestheuseofConvolutional Neural Networks(CNN) fortouchlessfingerprintidentification,anovelapproachthataddressessomelimitations of traditional fingerprint methods. It provides a practical framework for implementing smartphone-based fingerprint recognitionsystems,combiningcutting-edge deeplearningtechniquesandreal-worldapplications.I appreciate themanuscriptforitsforward-thinkingapproach,offeringsolutions toenhancebiometric securityina rapidlymobile-centricworld.Additionally,theinclusionofperformance metricsandadetailedanalysisofCNN	
Isthetitleofthearticlesuitable? (Ifnotpleasesuggestanalternativetitle)	Suitable	
Istheabstractofthearticlecomprehensive?Doyou suggesttheaddition(ordeletion)of somepointsinthis section?Pleasewriteyoursuggestionshere.	Comprehensive	
Aresubsectionsandstructureofthemanuscri pt appropriate?	Yes	
Pleasewritea fewsentencesregardingthescientific correctnessofthismanuscript.Whydoyouthinktha t thismanuscriptisscientificallyrobustandtechnica lly sound?Aminimumof 3-	The manuscriptisscientificallyrobustandtechnicallysounddue toits thoroughapproachinleveragingadvanced machinelearningtechniques forfingerprintidentification. Itincorporateswell-established methods,suchas ConvolutionalNeuralNetworks(CNN),andprovidesaclearmethodologyforboththedatacollectionand preprocessing stages. The manuscript also demonstrates an in-depth evaluation of performance metrics, comparingCNNmodelswithk-NearestNeighbors (kNN)tovalidateitsclaims.Furthermore, theuseoflarge, diversedatasets(IITandSOCOFing) andthedeploymentofmodels onAndroid	
Arethereferencessufficientandrecent?If youhave suggestionsofadditionalreferences,pleasement ion themintheirreviewform.	Referencesare sufficientand recent.	

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MinorREVISIONcomments **Isthelanguage/Englishqualityofthearticlesuitable forscholarlycommunications?**	Yes Thelanguagequalityofthearticleappearstobegenerallysuitablefor scholarlycommunication.However,there area fewareaswhereclaritycouldbeenhancedtoalignmorefullywithscholarlystandards: Thetechnicaltermsusedthroughoutthepaperareappropriate,butthetransitionsbetweenconceptscouldbe smoother.Forinstance,thediscussionof CNNsandtherelatedprocessescouldbenefitfromclearerexplanation, especiallyforreadersunfamiliarwiththe specificnuancesofthemethods. Somesentencesareoverlylongorcomplex,whichcanhindercomprehension.Forexample: "Theevaluationofthe CNNarchitecturefocusedonmobiledevicefingerprintrecognitionemphasizingkey processessuchasdatapre-processingmodeltrainingandtheoptimizationofthe CNNthrougha Siamese-CNN approachto boostaccuracyandefficiency." Thissentencecouldbe splitforclarityandreadability. Thereareoccasionalissueswithpunctuationandsentencestructure.Forexample,intheabstract: "Performancemetricsincludingidentificationaccuracyprocessingspeedandresourceutilizationwereanaly sed todeterminethesystem'sfeasibility." Thesentencewouldbenefitfromadditionalcommasto separatethelistedmetrics. Thearticleoccasionallyjumpsbetweenideas,particularlyintheliteraturereviewandresultssections.Mor e explicitconnectionsbetweenthesesectionsandclearertransitionswouldimprovetheflow. Minorgrammaticaladjustmentswouldhelptoenhancethe professionalterms. Thelanguageislargelyappropriatefor scholarlycommunication,refiningthe	
Optional/Generalcomments	The manuscriptfocusesonthe developmentandperformanceevaluationof a smartphone-based,touchless fingerprintidentificationsystemusingConvolutionalNeuralNetworks(CNN). Hereare somegeneralcomments: Thepaperexploreshowmachinelearning,particularlyCNNs,canenhancesmartphone-based fingerprint recognition.Theconcept ofusingtouchless methods, asopposedtotraditionaltouch-based fingerprint identification, isakeyinnovation.ThestudyutilizestheIITBombayandSOCOFingfingerprintdatabasesfor trainingandtestingCNNmodels.Different CNNarchitectures likeVGG16,VGG19,ResNet50,andInception-V3wereevaluatedtodeterminethemostefficientmodelforfingerprint recognition.Themodelsweretestedon accuracy,precision,recall,andF1-score.VGG19withmulti-augmentationperformedthebest,achievinga98% accuracy.Theoverallevaluationshowsthepracticalityof CNN-basedapproaches fortouchlessfingerprint recognition,with significantimprovementsovertraditionalalgorithmslikekNN.Theresearcheffectivelyhandles thechallengesofimagequalityintouchlessrecognitionthroughimagepreprocessingtechniquessuch as adaptive meanthresholdingandcore-point detection.Theimportanceofpreprocessingfornoisereductionandfeature extractionisemphasized.TheuseofSiameseCNNandmulti-augmentationtechniquesishighlightedasawayto improverecognitionaccuracy.Additionally, thedevelopmentofanAndroidappforfingerprintidentification showstheresearch's practicalapplication.Thepapermentions thatwhileCNNsshowpromise,furtherworkis neededtoaddressthelimitationsregardingfingerprintimagequalityandtheadaptabilityofthemodelsto differentsmartphonecameras.	

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PART 2:

	Reviewer's comment	**Author's comment***(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

Reviewer Details:

Name:	**Santhosh Shivaprakash**
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