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ProjectName	Project-Real-TimeCommunicationSystemPoweredbyAIforSpeciallyAbled

1.BasedRealTimeCommunicationforPhysicallyandSpeechDisabledPeople(OngChin Ann,MarleneValeriuLu–2019)

Communicationisasocialprocessofexchanginginformationfromoneentitytoanotherinverbalandnon-verbalform.Itdefinesourexistenceanditisanimportantinstrumentthatconnectspeopletogether.Itcomesnaturally asarawskillembeddedinmostpeopleatbirthandweacquiredthe

waysofcommunicationthroughcognitivelearning.Communicationisthebasis,whichdrivestheprocessofdevelo pmentinallthefields(Manohar,2008)anditistheverycoreofourcivilisation.Theabilitytocommunicateallowsusto expressemotion,feelings,conveyourthoughtsandideasaswellastorelateourexperiences.Itplaysanimportantrol einthedis-seminationofinformationandsharingofknowledgeespeciallyintheacademicarena.Researchhasfoundthathumans tartedtolearnhowtocommunicatewitheachothersincetheyarebornnotonlythroughspokenand

writtenlanguagesbutalsobodygesture,posture,facialexpressionandeyecontacts(Busso,etal.,2004;Cohen,Grag& Huang,2000).

Communicationskillmightcomeasanaturalabilityinmajorityofpeople.However,therearesomepeopleinfli ctedwithsomeformofphysicaldefectswhichaffecttheirabilityto

communicate.Oneofthemoreseveredisabilitiesisknownas"cerebralpalsy",acongenitaldisorderatbirth whichcausesabnormalityintheirMotorsystem.Itaffectstheirmuscle

movementandcoordination,learningandSpeechabilities.Theirmalfunctionedmotorsystemcausesanuncon trollableandinvoluntarymovement.Theyareunabletocontroltheiroralfacialmuscles,thusaffectstheirability toperformfacialexpressionappropriately.

Fromthelimitationoftheexistingtoolsreviewed(Novita,2006;Macsolvers,2009;Standup,2006;UniversiteitvanA msterdam,2008;Crestwood,2009;Sci-enceDaily,2008),thereisstillapressingneedformoreeffectiveandefficienttoolstoalleviatethisproblem.Onethepos siblemethodsaretoimplementafacialexpres-sionrecognitionsystemtopredictordeterminetheemotionalstateofadisabledpersonthroughhisexpressionproject edonhisface.biometricsinformationsystemcanbeemployedasameanstodetectandclassifythephysiologicalaspecto fapersoninrealtime.FrancoandTreves(2001)furthersupportthenotionthatfacialexpressioncanbeusedforhumanco mputerinteractionandusabilityenhancement.

Based on the problem statements deliberated above, we propose an improved real-time communication system using machine learning and computer vision. The aim is to create a communication channel between the specially abled and the society, so they can express there feelings, thoughts and understand other people's feelings and thoughts through real time communication and facial expressions.

2. Systematic review of computer vision semantic analysis in medical (Antonio Victor Alencar Lundgren, Byron Leite Dantas Bezzerra – 2021)

Medical diagnosing techniques have fascinated us for a long time. It has been common for us to use them in our daily life and implement these technologies. Machine learning and especially

computer vision contribute a lot in medical science, which make different difficult tasks easy for doctors and more tolerable for patients. They are widely useful in early detection of disease, and hence are a valuable tool to save human life. Cardiographic techniques are a must for old age and infant safety.

These include:

. **Retinoscopy-**
    They although primitive in approach are a must once in a lifetime and retinoscopy have made yet successful to measure activities of rod and cone receptors in our eyes. Retina has three distinct areas for colors - erythrolabe, chlorolabe and

    cyanolabe...which are analogical to pixel fixation and identification algorithms on machine learning.

. **Tumor detection-**
    Cancer is spreading in the world affecting billions of lives both in terms of life and money...machine learning diagnosing systems apply their

    identification systems to further develop accurate detection in terms of size, location, quality of such tissues which are suspected to become malignant uncontrolled group of fast dividing cells.

. **CT scan- CT scan**–A very common term for cancer patients which uses

    electromagnetic radiations under manually operated controlled computer vision

    gratings which are so accurate that it can measure a pigment called c-125 in blood.

3. A survey on Facial Emotion Recognition Techniques (Felipe Zago Canal, Tobias Rossi Muller, Gustavo Gino Scotton – 2022)

Facial expressions recognition is an ability to recognize people by their facial characteristic and differentiate it with one another. Human is born with the ability to recognize other people easily by identifying their facial features such as shape, appearance, skin texture and skin complexion. Other than that, humans also have the ability to express, interpret and differentiate facial expressions. The regular recurring ones are happiness, anger, disgust, fear, surprise and sad (Ekman & Friesen, 1978). The six facial emotions stated above are important and play a major role in expressing emotion as well as recognising facial expression (Busso, et al, 2004).

In real life, interpersonal human interaction are performed not only using speech or spoken language, but also non verbal cues for example hand gesture, body gesture, facial expression and tone of the voice. All these cues are sometimes being used for expressing feeling and give feedback (Busso, et al, 2004; Cohen, et Al., 2000). We can see how human interact with each other using non-verbal cues everyday. For example a child cries in front of his mother because he is not happy or dissatisfied with something. Other people might interpret it differently thinking that the child might be in pain.

Facial expression interaction is relevant mainly for community social life, teacher and student interaction, credibility in difference contexts, medicine and so on. Besides, facial expression recognition is useful for designing new winter active devices which offers the possibility of new ways for human computer interaction-HCI (Franco & Treves, 2001). Cohen, et al. (2000) conducted survey on their users and noticed that they have been through traditionally HCI consists of the keyboard, mouse, joystick, trackballs, datagloves and touchscreen monitors.

Facial Expression Recognition System (FER) has been a topic for research since Ekman and Friesen (1978) who pioneered this research and worked from the psychology perspective. In the past 20 years, many researchers have tried to adopt their idea and make improvement, innovation and modification on facial expression recognition by introducing different techniques, mainly concentrated on the improvement in term of accuracy, efficiency, mobility, and speed (Kotsia & Pitas, 2007). With all the enhancements on techniques for facial detection and recognition, the development of the facial expression recognition has also improved (Zhan & Zhou, 2007). The most active researches in computer vision and pattern recognition is face recognition in forensic identification, access control, user interface design (Wang, Plataniotis & Venetsanopoulos, 2005), emotion analysis, interactive video, indexing and retrieval of image and video database, image understanding and synthetic face animation (Zhan & Zhou, 2007).

Human can interpret and generate major facial expressions but a computer is not built with any facial recognition ability unless through the use of some software. It is even more complicated for the computer to interpret irregular facial expression, especially from those suffering from cerebral palsy. Due to their disorder, they do not have the ability to reflect their emotions like a normal typical person. Thus, a more natural and naive method has to be employed for the system to work by a manual labelling of the image captured with the emotion of the user.

4.MachineLearningbasedtechniquesindataanalysis(LavanyaVemulapalli,

Dr.P.ChandraSekhar–2018)

Alotmoreapplicationsavailableforusinplaystore,appstore,amazon,etc.,whichare

dependentmachinelearning.Therearesignificantnumberoforganizationsandstartupswhichturntowards
optimummachinelearning,andhaveprovedthatinvestinginmachinelearningisthebestintoday'sworld.

GoogleStreetView-Itisapervasivecityimagerydatasetsapplication.

Itisanapplicationfromwhichwecanvirtuallyexplorestreetsofcities.Itusesadense

geosamplingtooltoshowsthestreetsofcities.Streetsarecapturedthroughafleetofvehiclesequippedwitha
specializedcamera.

Aftercollectionofphotos,theyaredigitallyprocessedandcombinedtogetherandlookslikeasingleimage.Fro
mfilesreportedforprivacy,Googlepixelatedfacesofpedestrianandlicenseplatewhichiscaptured.Webmappi
ngtechnologieshavebeenembracedbydisciplinesuchasgeography,archeologyandecology,butalsobyseveral
socialscientificdisciplines.Researchersworkinginthedisciplineofgeography,archeology,andecologyquicklyi
ncorporatedwebbasedmappingtechnologiesintotheirresearchdesigns.Therearevariousapplicationsofgoo
glestreetviewinresearchfield,althoughthenumberstillremainslimited.Itisalsousedforbetter

estimationoffishcatching,estimationofforestrybiomassinIndia,estimationofareaofdifferentregionsorlake
s,etc.

Googlealsohelpsinthecriminologicalstudiesthathaveimplementedinthegooglemapsand

streetsviewintheirresearchdesign.Publicandsomelawenforcementagenciesandoffendersarefamiliarwiththe
powerofonlinemappingtechnologythroughtheirday-to-
daylifeandwork.Thesocialscienceshavealsoembracedweb-
mappingtechnologies.Buttogooglemapsstillremainlimitedinsocialscience.Wecanseegooglemapsanditsstree

tviewcanbeusedinvariousfields.Itcanbeusedinmappingordevelopingormaintainingcities'streets.WecanuseG
oogle'sstreetviewtomakeaninfrastructureofbuildingorapartment,park,bridges,water

reservoir,etc.GooglemapsandGooglestreetviewcanbeusedinsomeresearchfieldofdetectingthepopulationorurbanizationinsomeareasorthroughouttheglobe.

Uber-
Uberisoneoftheexamplesofusingmachinelearning.Itusesanalgorithmwhichprovidesestimatedtimeandreal-timelocationonmap,whichisveryusefulandhelpfulforbothdrivers

andriders.Thecompanyisalsodealingwithfraudulentbehaviorlikefacedetectionandinvalidstolencreditcards.

GoogleKeyboard-Almostallandroidhandsetusesgooglekeyboard.Gboardusestheneural

spatialmodeltodeterminethepixelstouchedonthescreenandmakingrelevantwordsandemoji

inhandwritingmode.Itpredictsthenextwordbymatchingthecurrentlytypedwordwithitsdictionaryset,whichhelpsusertotypefastandaccurate.

Snapchat-
Snapchatusesmachinelearningtoidentifyorfacedetectiontechnologyforapplyingfiltersonit.OnemaywonderabouthowSnapchatfilterworks?Itfirstdetectsaface.Thenlocatefacialfeatures,andthencreateameshof3Dmask(pyramidalshape)overface.Snapchatnotonlyapplyfiltersbutalsoalistofthingstheyaredoinglike,languagedetectionforveryshorttexts,

namesentityrecognitionanddisambiguationusingmultimodalNER(sound,text,etc.),

normalizingtextmisspellings(phonetic,orthographic,semanticrepresentations),emotionanalysis(fromemojitoactualpictures),speech,musicrecognition(keywordspotting),personalizedneural

conversationalmodels.Wecanusethistechnologyfordetectionofculprit'sfaceifheor/shemadesomefacialchanges.

VirtualVoiceAssistant-
Theworldmovesinthepathofautomation.Peoplewanttheirliveseasyandcomfortablelikethishandfreeserviceprovidedbyvoiceassistants.Therearelotsofvirtualassistantsavailablelikegoogleassistant,Apple'sSiri,CortanabyMicrosoft,AlexabyAmazon,Samsung'sSvoice,etc.Astheremoreadvancesinmachinelearningvoiceassistantsbecome

moreemotionallyattachedtohumanbeings.Voiceassistantsremindusontimesothatwedonotskipsomeimportantstuff.Voiceassistantsalongwithcomputervisioncandomanythingsthatweevencan'texpect.Itcandoalmost70%ofourdailywork,frommorningteatoevening

supper.

Evernote-
Evernoteusesmachinelearningwhichautomaticallyidentifiesthedocumentfilefromdevicestorageandappliesfilteronit,suchthatitappearsclearandtidy.

5.SurveyonMachineLearningAlgorithm's

(RekhaNagar,Dr.YudhvirSingh–2022)

Thesubfieldofartificialintelligence,machinelearninghasgainedmuchpopularityinlastfewcoupleofyears. Manytechgiantsusemachinelearningalgorithms,likeNetflix'salgorithmstomakemoviepredictionfromy ourpreviouswatchedmovies.Inthissection,wewouldliketopresentsomeofthefamousalgorithmswhichus efrequently.

Theyare:

.**Naïve-Bayes'algorithm-**

Thisisthealgorithmmostlyusedinmachinesandhardware.ItsimplyappliesBayes'theoremalongwith strongindependenceassumptions.Let'stakeanexample,tomarkanemailasspam,usedforfacedetecti onsoftware,etc.

.**K-meansclusteringalgorithm-**Thisisatypeofunsupervisedlearningwhichhas

varioususesincludingbusinessandmanagement.Thisalgorithmalsoletsusknowprofitateachstageoft heproduct.ItisalsoreferredasLloyd'salgorithm.Thisalgorithmisalsousedingroupingoffeaturesintod ifferentlabels.

DecisionTrees-
Thesearetreesinwhichdecisionsaremadebythecomputerateachstagebaseduponrecurrencerelati ons.
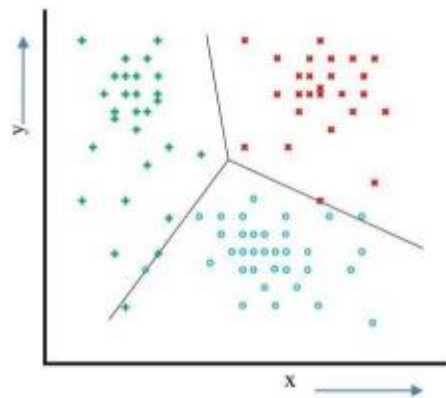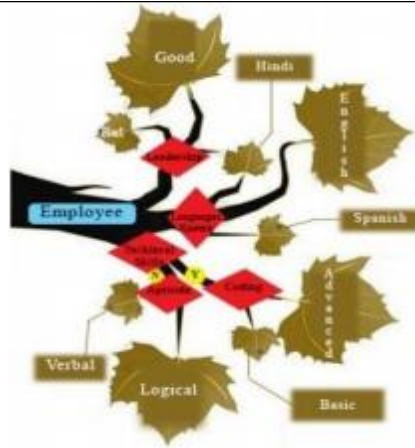
.NeuralNetwork-

Ourneuronsinbodyplayamajorroleindeterminingthestepstoprocessasingletask.Similarly,artificialneuronsarethosewhichhelpthenervous

systemoftransistorsinanysequentialorcombinationalcircuittotakeupadecisionandexecuteitcon ditionally.Thisagaindependsonactivityoftheneurons.Anartificial

neuronisanactualpieceofhardwaremachinerywhichhelpsthesystemtotakeupa

decisionbasedonthereceptors,assuchseveraloptoelectronicdeviceshavealreadybeen

developed.Thisalgorithmhelpsustobuildanymachinefunctioningexactlyashumanreflexarcs.

Input   Hidden layers   Output
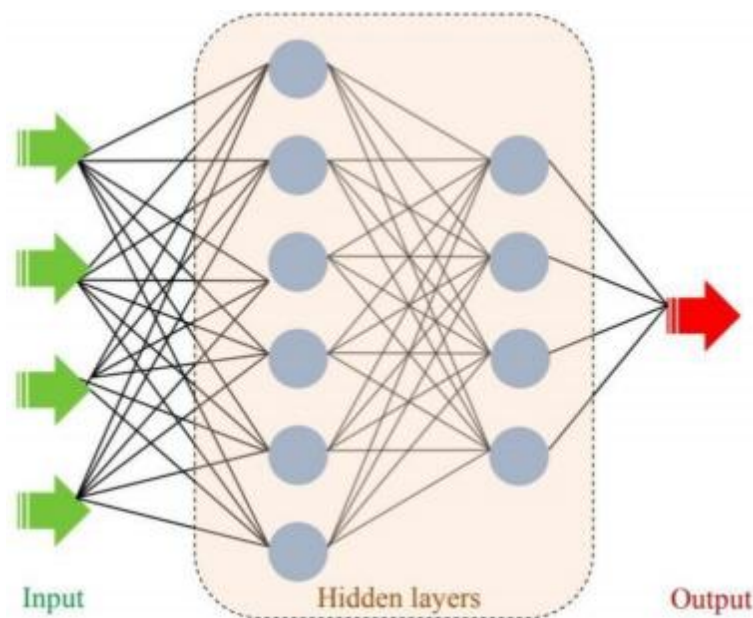
Algorithmsusedinmachineshaveseveralimportantimplementations.Wealsohave

regressionofvalueaswellasregressiontrees,whichhelpustododifferentusefulkindofjob.Thealgori thmsarealsousefulinhealthcareindustries,forexample,random

forestdistributionalgorithm,thisalgorithmismostlyderivedfromstatisticalstudies...theyareus efulincalculatingpeopledensitiesandmassorchunkdensity.Themost

importantistheartificialneuralnetworksalgorithm.Thisalgorithmisrelatedtoartificialintelligenc eandneuralnetworking.Thoughformassapplicationwemusthavemachine

learning.Throughcomputervisionthesealgorithmjudgesystemsonbasisoftheirreactancet oexternalstimuli.

6. Survey on application of Artificial Intelligence in Cyber Security (Shidawa Baba Atiku, Achi Unimke Aaron, Fatima Shittu – 2020)

Cyber security refers to protecting your personal computer from malicious software. Machine

learning has a lot many algorithms and systems which protect users from threats. Such as the Paypal app which was developed in December 1998, uses machine learning algorithms to protect its users from different threats and online spoofing. It uses three types of machine learning algorithms that

are linear, neural network, and deep learning algorithm.

They are:

. **Waterhole-** It is like a pit surrounded by greenery. Hackers access other people's

information by using sites which are more accessible to the public more than anything else….for example, networks in a coffee shop is accessed by so many users such that these users load their pc's with whatsoever data is provided to them. Like this there are so many sites to put on viruses and worms. Machine learning has algorithms that detect path of these malware blocking them with a firewall thereafter.

. **Webshell-**
These are piece of code which is loaded into a working device which provokes the user to misjudge and then taking advantage, entry is gained into the full database.

. **Ransomware-**
Similar to webshell, but here the user is vulnerably threatened externally by a group of software brokers who have corrupted the users' personal files. Such

scenarios can be totally avoided by using machine level language which was early detection.