

Human Computer Interaction (Hindi mein)

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HCI and AI in Conversational Systems: Lecture 12, Part 1

Lec41

Namaskar Human Computer Interaction ke is antim saptah mein aapka swagat hai. Is 12vein saptah mein hum Human Computer Interaction aur AI based jo samvaad ka system hai, sanchaar ka system hai, iske baare mein hum baat karenge. Kaise vah hamare jeevan ka ek abhinn ang hai aur kaise AI aur SCI ke maadhyam se hum usko aur sugam aur saral tareeke se aur ek tarah se svaayat tareeke se achhe se kar rahe hain. Vah hum is saptah mein seekhenge. Iske pehle alag-alag adhyaayon mein alag-alag saptahon mein aapne Human Computer Interaction ke har pehlu pe charcha ki. Toh finally hum ek tarah se is saptah mein hum charcha karenge kaise samvaad ke liye hum alag-alag system bana sakte hain kyonki Human Computer Interaction mein hamein apne system ke sath samvaad karna padta hai aur alag-alag tareeke ke samvaad hum sthaapit karte hain sanchaar ke maadhyam se. Toh chaliye hum dekhte hain is saptah mein. Uske pehle agar hum ek punraavriti kar le pichle saptah mein hamne baat ki thi kaise alag-alag jo harm ho sakte hain AI ke maadhyam se uske upar hamne charcha ki thi. Hamne Jeffrey Hinton ke baare mein baat ki thi. Kaise unhone Turing aur Nobel Prize jeetne ke baad in-fact Turing Award jeetne ke baad hi unhone Google mein apni job chhod chhod ke ek tarah se logon ko sachet karne ki koshish ki. Kaise agar AI jo hai agar vah human level se upar ka intelligence praapt kar leta hai toh kaise vah maanav jaati ke liye ek bahut bada khatra ho sakta hai. Toh is vajah se unhone is pe dhyaan dilaane ki koshish ki ki jab bhi hum AI base system ko use karte hain toh dheere-dheere vah aur bhi taakatvar aur bhi intelligent hota jaa raha hai. Toh hamein is baat par dhyaan dene ki zaroorat hai kaise hum kin siddhaanton ko kin guideline ko kin policy ko hamein follow karne ki zaroorat hai. Hamne is baat ke baare mein bhi baat ki thi ki kisi bhi haalat mein AI ko manushya ko harm nahin pahunchaana chahiye. At no cost it should harm the human being. Toh uske baad hamne deep fake ke baare mein baat ki thi. Kaise alag-alag tareeke ke deep fake videos, deep fake audios ah AI ke maadhyam se generate ho sakte hain. Generate kiye jaate hain aur kaise unke alag-alag nuksaan hamare jeevan mein hamare society mein hamein dikhte hain. Hamne ah baat ki thi kaise gopneeyata aur suraksha ah SI ke perspective se ah kitni zaroori hai aur hum kaise ensure kar sakte hain jo hamari upyogakarta hain unki gopneeyata ko aur unki data ki suraksha ko aur unki suraksha ko hamne Chat GPT ke maadhyam se privacy aur security ke upar bhi ek demo kiya tha aur hamne ant mein aapko ek assignment diya tha aur aasha karta hoon aapne vo vo saara kar liya hoga. Toh yah is saptah ki rooprekha hai. Ismein hum human communication system kaise kaarya karta hai? Kaise maanav ka

sanchaar system kaarya karta hai? Sabse pehle hum usko jaanane ki koshish karenge. Uske baad jaisa ki hamne bola tha pehle ke adhyaayon mein hum dheere-dheere physical world se digital world ki taraf jaa rahe hain. Toh agar jaise do aadmiyon do manushyon ke beech mein sanchaar sthaapit ho raha hai. Jaise preshit jo preshak hota hai jo ek tarah se sam jo usko message bhejna hai jo sandesh bhejna hai aur jo receiver jo praapt karta hai usko receive karta hai toh abhi wahaan pe ek tarah se do manushya hain jinke beech mein sandesh ka aadaan-pradaan ho raha hai toh hum jab usko AI ke maadhyam se karte hain jaisa ki hamne bola hum physical world se digital world ki taraf jaa rahe toh ho sakta hai ki abhi do manushyon ke beech mein samvaad sthaapit ho raha hai, sanchaar ho raha hai. Toh ab unmein se ek manushya AI system ho sakta hai jo ki aapko manushya ke jaise receiver ke jaise aapko aapke prashnon ka uttar dega aur aapki jo bhi zarooratein hain unko poora karega. Toh hum baat karenge kaise human communication system ke baad hum AI based communication system ki baat karenge. Kaise vah hamare jeevan ka bhi abhinna ang banta jaa raha hai aur kis tarah se alag-alag jo samvaad human communication base system mein hote hain vo saari cheezein ek tarah se AI based communication system mein bhi hongii. Uske baad hum is baat par zor dene ki koshish karenge ki jaise ki hum alag-alag jo intelligent system hai, intelligent agents hain, unke maadhyam se apne kaarya ko kar rahe hain. Samvaad karke kar rahe hain. Unka socially responsible hona bahut zaroori hai. Agar vah socially responsible nahin honge toh Geoffrey Hinton ki baat ek tarah se sahi ho jaayegi. Vah aage chalke maanav jaati ke liye is brahmaand ke liye kaafi khatarnaak saabit ho sakte hain. Toh hum AI base conversation system ke upar demo karenge aur hum jo hamara project is poore course ke dauraan hum develop kar rahe a project wave ek tarah se Braille learning app ah for visually impaired students. Toh ek tarah se hum uska final project ka demo karenge ki hamne kaise usko shuruat se shuru karke kaise uske alag-alag pehluon ko pe kaarya karte hue ant mein hamne uska ek poora complete project banaaya aur ant mein hum is aakhri saptah mein aapko aakhri assignment denge aur jisko aapse aasha hai ki aap samay pe complete karenge. Toh chaliye start karte hain jaanane ke liye human communication system kya hai? Manushya ka sanchaar system kya hai? Toh yah ek tarah se prakriya hai jismein information ka aadaan-pradaan hota hai. Vah individual ke beech mein ho sakta hai. Alag-alag jo individual hain vyakti hain unke beech mein ho sakta hai. Aur inke liye jin cheezon ko use kiya jaata hai vo symbol ho sakte hain. Vo sign ho sakta hai. Vo behavior ho sakta hai. Vo information ho sakta hai. Toh iski mahatta clear hai ki communication is central to the human interaction. Jab bhi hum do vyaktiyon ke beech mein interaction karte hain toh kisi tareeke se sanchaar aur samvaad karne ki koshish karte hain. Toh which facilitate relationship collaboration and the transmission of culture. Toh ek tarah se vah keval samvaad tak seemit nahin hota hai. Vah ek tarah se hamare culture ko bhi culture ko bhi ek tarah se transfer karta hai. Transmission karta hai. Toh agar hum isko modelling ke aspect se dekhein toh Shannon and Weaver ki is theory ko aapne padha hoga. The Mathematical Theory of Communication jismein unhone bola tha ki jo sanchaar ki hum baat kar rahe hain hum samvaad ki baat kar rahe hain toh sanchaar ki jo baat kar rahe hain vah ek tarah se agar hum khule shabdon mein bole toh yah saare procedure hai saari prakriya hai jiske maadhyam se hum ek jo ek log ke mind ko hum kisi bhi tareeke se affect karte hain aur vah ek

tarah se jo sanchaar hum kar rahe hain, vah zaroori nahin hai ki hum keval likhit tareeke se karein ya bol ke karein. Vah kuchh bhi ho sakta hai. Vah hamara gesture bhi ho sakta hai. Vo music bhi ho sakta hai. Vo hamara behavior bhi ho sakta hai. Vo pictorial art, theatre ballet. In-fact koi bhi kisi bhi tareeke ka human behavior ho sakta hai jiske maadhyam se aap apne saamne waale vyakti ke ek tarah se mastishk ko prabhaavit karte hain. Toh Shannon and Weaver ke is seminal work mein ek tarah se unhonne is communication problem ko ek tarah se sanchaar ke problem ko teen level mein baanta tha. Toh jo pehla level hai usko aap keh sakte hain how accurately can the symbol of communication be transmitted? Toh ek tarah se yah ek technical problem hai. Jaise ki agar hamne koi aapko sandesh bheja toh vah sandesh kitna sahi tareeke se bina kisi information loss ke aapke paas pahunch paa raha hai. Agar preshak ne kisi sandesh ko bheja toh praaptkarta kya usko completely praapt kar paa raha hai? Kahin usmein kuchh information ka loss toh nahin hua. Kuchh usmein se kho toh nahin gaya, gaayab toh nahin ho gaya, corrupt toh nahin ho gaya. Aur isi tareeke se hum level B ki baat karein toh how precisely do the transmitted symbols convey the desired meaning. Agar aapko jo sandesh preshak ne bheja hai toh praaptkarta kya uska matlab nikaal paa raha hai ki message sandesh mein bheja gaya tha toh ek tarah se ye semantic problem hai aur jo last aur teesra level hai how effectively does the received meaning affect conduct in the desired way theek hai maine pehle mein sahi tareeke se sandesh bhej diya doosre mein maine jo sandesh bheja usko samajh mein aa lekin teesra ek tarah se behavior ke jo us message ya sandesh ko milne pe jo uska behavior hona chahiye hona chahiye tha kya vo hua toh ek tarah se yah hamein effectiveness problem pe kitna prabhaavshaali vo message tha us pe baat karte hain toh ek tarah se ismein vah jaise usko sandesh hamne bheja sahi mil gaya uske baad usne usko samajh liya aur hum usse aasha karte the ki is sandesh ke milne ke baad vah aapko ek reply dega ya aapke jo message ko like karega ya aapke message ko repost karega. Toh ek tarah se jo bhi aap effect soch rahe hain agar vaisa hota hai toh ek tarah se vah kaafi prabhaavshaali raha. Toh ek tarah se is tarah ki jo sanchaar hai vo level C third level mein aata hai. Toh jaise aap yahaan pe dekh sakte hain jo aapke sandesh ka source hai jahaan se udgam point hai wahaan se aapne sanchaar bheja sandesh ko bheja aur yahaan pe jo preshak tha usne ek maadhyam ke maadhyam ke maadhyam se aage bheja aur jo praaptkarta tha us sandesh ko praapt paane ke baad ek tarah se destination pe aa gaya. Ho sakta hai ki beech mein us sandesh ke beech mein kuchh noise add ho jaaye, kuchh corruption add ho jaaye. Toh hum agar aisa kuchh hota hai toh kaise usse recover kar paa rahe hain ye bhi ek tarah se dekhne ki zaroorat hai. Ek cheez aapko aur ye dekhne ki zaroorat hai. Ye jo teeno levels hain ek ke upar ek ke upar ek bane rahe. Matlab ki agar aap level C level pe aap jaana chahte hain, toh level B pehle solve karna padega. Aur level B pe jaana chahte hain, toh pehle level A solve karna padega. Aur yah is baat se clear bhi hai nahin ki agar aap chahte hain ki aapka jo message tha vo aap sahi tareeke se samjhein toh pehle toh aapko sahi tareeke se bhejna padega na toh ye hona zaroori hai. Usi tareeke se agar hum chahte hain ki hamne jo message bheja uske hisaab se aap jo main soch raha hoon aap kariye toh aapko toh pehle vo message is tareeke se bhejna padega ki vo samajh mein aaye. Toh is wajah se ek tarah se keh sakte hain ki the three levels built on top of each other so that to solve level C we need level A and B to be solved first. Toh agar hum isko aaj ke time par

dekhein khaastaur pe AI ke point of view aur Internet ke point of view se dekhein toh jo pehla level ka problem tha the technical problem vah Internet ki aur technical advancement takneeki itni advance ho gayi hai ki aap keh sakte hain ki us usko aap bade achhe level pe kar paa rahe hain. Toh Internet aur technical advancement ki vajah se aap ek tarah se hum bol sakte hain ki level one jo hai vah achhe se solve ho gaya. Khaastaur pe LLM ke advancement ke baad jo bade bhasha model hai unke advancement ke baad hum keh sakte hain jo second problem second level of message tha the semantic problem vo bhi bade achhe se solve ho gaya. Kyonki hamne alag-alag researcher ke maadhyam se dekha hai ki abhi jo advance LLM hai vo aapko madad karte hain message ko samajhne mein, message ko uske sentiment ko samajhne mein, uske emotion ko samajhne mein, usko summarize karne mein. Ek tarah se zyaadatar jo possibility hai vo saari cheezein semantic level pe vo usko kar paa rahi hain. Aakhri level jo tha the effectiveness problem usko hum chaar bhaag mein further divide kar sakte hain. Jaise simulate human behavior for a certain content. Agar aapke paas koi content hai, koi message hai toh us message ke hisaab se uska behavior jo praaptkarta hai uska behavior kya hoga? Udhaaran ke taur pe aap keh sakte hain ki agar maine ek Instagram par photo daala toh kya aap iske jo praaptkarta hain jo aapke follower hain unka behavior aap bata sakte hain? Kitne log isko like karenge? Kitne log isko ek tarah se share karenge. Usi tareeke se agar hum doosre ki baat karein generate content to elicit a given behavior. Toh us case mein ek tarah se iski reverse problem hai. Ismein hum ye karenge ki ab hamein is image ko is tareeke se generate karna hai ki kam se kam 1000 log isko like karein. Agar hum agle baat ki dekhein toh user behavior to extract signal about content. Toh ek tarah se yah keh sakte hain ki content understanding ki baat ho rahi hai ki agar behavior ke maadhyam se agar hum alag-alag content nikaal sakte hain, alag-alag content ke baare mein bata sakte hain ki kis tareeke se use hua. Ah toh ah keh sakte hain ki yah ah third problem ko solve karta hai. Aur jo last effectiveness ki problem hai, agar ah koi jo aapka upyog karta hai, usne jo bhi act kiya, jo bhi behavior usne kiya, usne kyon kiya? Agar hum usko explain kar sakte hain, toh ek tarah se yah fourth problem ho jaayegi is effectiveness problem mein. Toh, jaise hum yahaan pe dekh sakte hain explain human behavior. Toh jaise jo particular user tha usne isko like kiya. Ek doosre user ne like nahin kiya. Toh kya hum explain kar sakte hain ki is tarah ke user ne isko like kiya but jabki doosre tareeke ke user ne isko nahin like kiya. Toh is research mein ye hamara ICLR mein publish paper hai. Research paper hai jismein hamne dikhaaya tha ki kaise aap user behavior ko jo aapke upyog karta hai uske alag-alag behavior ko use karke aap LLM ko ek LLM aisa bana sakte hain jo ki behavior ko apne dhyaan mein rakhte hue apne capabilities ko aage badhaata hai. Jismein aap alag-alag in problem ko solve kar sakte hain aur kar sakte hain. Toh jaise is case mein aap dekh sakte hain hamare model ka naam tha Large Large Content and Behavior Model. Toh ek tarah se yah ek tarah se LLM hai jo behavior ke upar ek tarah se aap keh sakte hain fine-tune hai. Toh jaise aap yahaan pe dekh sakte hain yahaan pe jo communicator hai yahaan pe Nki brand hai jiske alag ek tarah se kareeb 7500 subscribers hain. Toh is channel ki aapke paas kuchh information hai. Jaise yah Nki football ka hai. Posted by Nki hai aur iske itne subscriber hain aur alag-alag social media channels pe ek tarah se keh sakte hain ki isko bheja gaya hai. Toh jaise udhaaran ke taur pe agar isko YouTube

pe bheja gaya hai toh aap dekh sakte hain ki is message mein ye jo message bheja gaya hai uska description yah hai. Object ismein kaun-kaun hai? Toh ek tarah se ismein football hai, player hai, grass hai aur ASR jo ki aapne is particular video mein jo bhi bola jaa raha hai usko text mein convert kiya hai toh ek tarah se uska text hai aur iske audience kaun hai? Audience koi bhi ho sakta hai. Ek toh jo aapke YouTube ke subscriber honge NYKI waale vo honge aur vo log bhi honge jo general audience honge. Zaroori nahin ki vo aapke channel ko follow karte hain. Toh us tareeke se jab receiver ko yah message mila YouTube ke upar toh ab uske alag-alag effect honge. Matlab kuchh log isko like karenge, kuchh log isko bas dekhenge, kuchh log aise karenge ki screen replay karenge. Kuchh particular part of the video ko dobara dekhenge jo ki unko pasand aaya ya of their interest. Toh is tareeke se hum dekh sakte hain ki hum in behavior aspect ko jo ya unke message ke upar jo effect tha jaise yahaan pe like views replay values uske hisaab se hum jo bade bhasha model ko bana sakte hain. LLM ko bana sakte hain aur vo usi hisaab se jo effectiveness ki ye chaar problem ko hamne discuss kiya tha usko vo solve kar sakta hai. Toh agar hum ab alag-alag component ki baat karein jo ki human com human conversation system mein use hota hai toh ismein ek tarah se ek preshak hai ek sandesh hai usmein se isko aap ek tarah se encode karke aage kisi medium pe bhejte hain aur receiver jo ki praapt karta hai usko decode karta hai aur decode karne ke baad usko samajhta hai aur phir koi feedback deta hai ki haan achha message mil gaya samajh mein aa gaya है jo bhi hai toh ek tarah se aap dekh sakte hain kaise dono ke beech mein ek sanchaar sthaapit ho raha hai Human Computer Interaction ke case mein pehle dono taraf ek tarah se manushya hote the aur abhi ek taraf manushya hai aur doosri taraf ek tarah se AI system ya ek tarah se LLM base system ya ek tarah se keh sakte hain robot hai. Toh ab ismein jo model of communication hona chahiye vo kayi tareeke ka ho sakta hai. Vo linear bhi ho sakta hai. Jismein jo preshak hota hai keval sandesh ko aapke praaptkarta ke paas bhej deta hai. Ek tarah se unidirectional hota hai. Agar hum iske udhaaran ki baat karein toh aap sabhi log jaise radio sunte hain, television sunte hain toh vah ek tarah se ek tarfa hota hai. Interactive model interactive model jismein ek tarah se dono ke beech mein paraspar kriya hoti hai. Toh uske case mein aap dekh sakte hain ki sender bhi message bhej sakta hai. Receiver bhi message bhej sakta hai. Toh ek tarah se jaise aapne jo preshak tha usne ek sandesh bheja. Receiver ko mila. Ab receiver usko padhne ke baad kuchh feedback ke saath usko dobara ek tarah se sender ke paas bhejta hai. Toh ek tarah se dono ke beech mein paraspar kriya ho rahi hai aur uske maadhyam se dono ke beech mein sanchaar ho raha hai. Teesra hai transactional model jismein ek tarah se hum bol sakte hain len-den ki kriya. Toh ye ek tarah se thodi si jatil kriya hai jismein dono party ek saath message ek doosre ko bhej sakte hain. Jaise pichhle ka example agar hum dekhein toh jaise hum email bhejte hain. Aap chatting karte hain. Jaise hum email bhejte hain, chatting karte hain. Ek tarah se ye interactive model ka example ho gaya. Transactional model mein basically hota hai a more complex where both parties send and receive message simultaneously. Wahaan pe dono log ek saath ek tarah se message bhej sakte hain aur ah un dono ke beech mein len-den ki prakriya ho sakti hai. Aur jab bhi hum sandesh ko dono ke beech mein bhej rahe hain toh any interference that distorts the message example physical noise language barrier aur misunderstanding yah ho sakti hai. Toh kaise hum in noise ko handle karte hain. Yah

bhi ek bahut hi mahatvapooran bindu hota hai. Aur agar hum transactional model ke example ki baat karein toh aap jaise ek mitra aapas mein aamne-saamne baat karte hain. Dono ek saath bol sakte hain. Dono preshak ki bhoomika nibha sakte hain. Dono praaptkarta ki bhoomika nibha sakte hain. Toh ek tarah se aap ek tarah se online video call jo kar rahe hain. Vah ek tarah se transactional model ka example ho gaya. Alag-alag type ke communication ho sakte hain ya maukhik communication ho sakta hai ya amaukhik communication ho sakta hai ya ek tarah se paribhashit communication ho sakta hai ya ek tarah se written communication ho sakta hai. Toh jaise maukhik communication ke case mein hum dekh sakte hain. Yahaan pe word aur language ka ek tarah se involvement hota hai. Aur iska example aap dekh sakte hain. Jaise teacher apne student ko koi cheez bata raha hai toh vah ek tarah se verbal communication ho gaya. Non-verbal communication mein toh ek tarah se jaise hum facial expression gesture aur body ki baat karte hain. Jaise agar teacher student ko kuchh bata raha hai agar aap apne sar ko hilaate hain ya aise karte hain toh ek tarah se aap bataate hain aapko samajh mein aa raha hai nahin aa raha hai ya aap apne facial expression ko aise banaate hain ki samajh mein nahin aa raha hai ya probably aap bade khushi tareeke se ah matlab usko kar rahe hain. Toh ek tarah se ye sab non-verbal communication hai jiske maadhyam se hum ek tarah se message ka sanchar karte hain. Aage aage bhejte hain ki hamein ye samajh mein aa raha hai nahin aa raha hai. Paralinguistic ke case mein jaise yah alag-alag speech ke jaise jo aapka ek tarah se swar hai, chaahe gati hai, chaahe rhythm hai ya ek tarah se jo haav-bhaav hai, usse hum ek tarah se apne samvaad ko karte hain. Jaise aapne bola hmm ya matlab bol diya hatt jao toh ek tarah se aapka ye jo haav-bhaav tha tone tha ek tarah se indicate karta hai ki aap naaraaz hain. Toh aapne bola nahin aap naaraaz hain. Lekin ek tarah se in paralinguistic communication ke maadhyam se aapne bataaya ki aap naaraaz hain. Aap gussa ho rahe hain. Usi tarah se written communication ke maadhyam se symbol ke maadhyam se aap apni baaton ko ah praaptkarta ke paas bataate hain. Usi tareeke se agar hum context ki baat karein kyonki context ek bahut hi aham bhoomika nibhaata hai kisi bhi communication system mein. Toh cultural context ki baat karein toh cultural norms and values that influence how messages are sent and received. Jaise hum American culture ki baat karein toh wahaan pe jo student hote hain apne teacher ko vo naam se hi bulaate hain. But kya aap yah India mein expect kar sakte hain? Nahin kar sakte. Similarly India mein koi student hota hai, vah teacher ko jab bhi dekhta hai toh pair chhoota hai. Kya yah America mein aap soch sakte hain? Toh cultural context hai. Usi tareeke se social context ki agar hum baat karein toh social context mein the relationship between the communicators and their roles. Jaise agar boss aur jo uska uska karmachaari hai uske beech mein koi baat ho rahi hai toh wahaan pe baat karne ka lehja alag hoga. Sir kya hum chal sakte hain? Late ho raha hai ya aise bolenge sir aap kahiye toh ab hum log ghar chal sakte hain. Lekin agar wahin pe agar aapko mitra hota toh bolte chal yaar chalte hain late ho raha hai. Aap kuchh is tareeke se bolte. Situational context kuchh aisa ho sakta hai. The environment or setting where communication occurs which can impact the message. Wahaan pe dono jo ek tarah se samvaad karta hai same hai. Lekin agar environment change ho jaata hai toh ek tarah se sanchar bhi badal jaata hai. Jaise agar aap apne jo aapke dost hain unko ghar pe dekhte hain, kisi party mein dekhte hain toh bolte hain kya mast lag raha hai

yaar aaj tu? Lekin agar usi ko aap office mein dekhte hain toh aap shaayad bolte hain aaj aap achhe lag rahe hain. Kuchh ek tarah se vyakti same hai but ki environment badal gaya, setting badal gaya toh ek tarah se samvaad bhi usi hisaab se badal gaya. Toh effective communication ek tarah se bahut zaroori hai. But iske kayi barriers hain. Physical barrier ho sakte hain. Jaise noise distance, environmental distraction ye saari cheezein ho sakti hain. Jaise aap baat karna chahte hain. But aapke bagal mein construction ka kaam chal raha hai. Aap ek traffic mein phanse hain. Wahaan pe baat karna chah rahe hain. Toh ye physical barriers hain. Aur physiological barriers ho sakte hain. Jaise aap stress mein hai, emotional state mein hain. Prejudice hai koi semantic barrier ho sakta hai jahaan pe misunderstanding due to the language difference aur unclear words jaise aap ho sakta hai ki jisse aap sanchaar kar rahe hain usko aapki bhasha na aati ho ek toh aur aisa bhi ho sakta hai bhale usko aapki bhasha aati hai lekin aap uske accent ko nahin samajhte jaise as a Bhaarateeya agar hum kisi American vyakti se baat karte hain pehli baar baat karte hain toh unke tone ko unke accent ko hum achhe se nahin samajh paate hain aur same unko bhi hamari baaton ko Aise hi lagta hai cultural barrier ho sakta hai. Jaise differential values and the norms between the culture. Jaise hamne pichhle example mein bhi baat kiya. Jaise hum India mein agar kisi se baat karte hain toh ek tarah se respect ke saath aapki baat karke baat karte hain aur wahi cheez agar probably doosre culture mein baat karein toh seedhe naam leke baat karte hain. Toh usi tareeke se effective communication ke liye hamein kuchh cheezon ka dhyaan dena padega. Active listening karna padega. Toh jis pe hum hamara jo main dhyaan hoga vah bolne waale ke upar hoga ah aur uski baaton ko samajh ke us hisaab se usko respond karne pe hoga. Hamein agla hum dekhte hain clarity and conciseness. So clarity aur sankshipt tareeke se present karna bahut zaroori hai. Jaise company bol rahi hai ki is timaahi mein hamein 20% 20% ke growth se hamara aage badha aage badhi company ya 20% ka zyaada faayda hua aur doosre company probably aise bole ki is saal is timaahi mein hamne bahut mehnat kiya aur hum grow kar rahe hain. Toh ek tarah se clear nahin tha ki aap kitna grow kar rahe hain, kaise kar rahe hain vagera-vagera. Toh ek tarah se isko clear clarity aur conciseness ke saath bolna bahut zaroori hai. Feedback offer constructive feedback to ensure the message is understood. Jaise aap ka student koi presentation de raha hai aur as a teacher agar main bolta hoon haan but ismein aapne achha kiya lekin isko ye part ko bhi karte toh aur achha rehta toh ek tarah se feedback wahaan pe aapke message ko hamne samajh liya aur hamne ek usmein further feedback add kiya empathy understanding the emotional context of the message jaise aapka koi dost hai vah stress mein hai vo pareshaan hai aur vo vo for example exam exam mein fail ho gaya hai toh ya toh aap usko aise bol dein tu hai hi is laayak tu paas hi nahin ho sakta tujhe kuchh aata hi nahin hai ya agar aap use sahi tareeka dekhein effective tareeka yah hoga ki aap use sahaanubhooti nibhaate hue bole mujhe sun ke bada dukh hua ki aap fail ho gaye but koi baat nahin aap mehnat kariye aap agli baar zaroor paas ho jaayenge mujhe aasha hai aap is baar in kaaranon vash achhe se nahin kar paaye but agli baar zaroor kar paayenge usi tareeke se adaptability adjust your communication based on the context and audience. Jaise aap apne dost se baat kar rahe hain toh bade casual tareeke se baat karte hain. Jaise hi apne boss se teacher se baat karenge thoda sa aur formal tareeke se baat karte hain. Adapt karte hain apne communication ko. Toh ek tarah se

technology in communication ko aur behtar bana raha hai. Jaise the advent of digital communication technology aap email ke maadhyam se social media video call ke maadhyam se kaise ek tarah se alag-alag vyakti aapas mein sanchaar kar paa raha hai. Bhale hi vah door ho koson hazaaron meel door ho vah achhe se baat kar paa raha hai. Ek doosre ko dekh paa raha hai. Samajh paa raha hai. The impact on interpersonal communication. So technology has increased the speed of communication but can also introduce challenges like misinterpretation or reduced personal connection. Toh jaise jab bhi hum kisi vyakti se aamne saamne baat karte hain toh hum uske haav-bhaav ko bhi dekh rahe hain, sun rahe hain, samajh rahe hain aur uske context ko jaante hain ki vo kis situation mein hai, kis haal mein hai. But agar hum suppose phone pe baat kar rahe hain toh kabhi-kabhi hamein bhale hi vah vyakti pareshaan hai but uski baaton se nahin lagta hai. Toh ek tarah se keh sakte hain ki misinterpretation ya reduced personal connection ho sakta hai. Toh agar hum isko summarize karein toh the human communication system involves multiple components and factors that influence how the messages are sent received and understood toh jaise hamne alag-alag cheezein baat ki us tareeke se is tarah se sanchaar ho raha hai aur importance of effective communication kyonki effective communication ki mahatta ko samajhna bahut zaroori hai kyonki bina iske aap apne message ko sahi tareeke se praaptkarta ko bata nahin sakte hain aur uske alag-alag implications ho sakte hain. So mastery of communication techniques is crucial in personal, professional and social interaction. Ab future trend ek tarah se jis tareeke se aage jaa raha hai the role of AI and machine learning in improving communication jaise chatbot aur alag-alag jo virtual agents hain voice assistant hai unke maadhyam se aap kar paa rahe hain. Toh chaliye jaise ye toh hamne abhi baat ki ki kaise vyaktiyon ke beech mein human communication system work karta hai aur going forward jaise ki hamne bataaya ki ab aapke saamne waala vyakti ek tarah se takneeki se replace hota jaa raha hai aur apne kaarya aap agle vyakti ki bajaay ab takneeki upkaranon aur computer machines ke saath kar rahe hain. Toh ek tarah se AI base communication system ko samajhne ki zaroorat hai. Toh what are conversational system? Toh AI based conversational system ek tarah se like chatbot virtual assistant use natural language processing to interact with user through spoken or written language ek tarah se aap jo bhi aapka computer hai machine hai toh wahaan pe chatbot ke maadhyam se aap use natural language mein likh ke bol ke usse apne prashn ko bol sakte hain aur usse jo bhi aap apeksha rakhte hain vah usse expect kar sakte hain. Toh in Human Computer Interaction the focus is on creating yah jo ah dono ke beech mein samvaad ho raha hai. Dono ke beech mein jo ah message ka sanchaar ho raha hai, vah aap kitna seamless tareeke se jaise usko pata hi na chale ki aap bade aasaani se usko pata hi na chale ki aap ek computer ke saath baat kar rahe hain. Usko lage ki abhi bhi aap ek vyakti ke saath baat kar rahe hain. Bilkul saahaj ho. Ekdam natural tareeke se bilkul natural language mein jo uski bolchaal ki bhasha hai jo likhne ki bhasha hai usmein aur bahut hi kushalta poorvak vah aap samvaad kar paaye human aur machine ke beech mein yahi aapka ek tarah se conversational system banaane ka uddeshya hai aur yahaan pe jo key feature honge natural language understanding kyonki natural language mein jo bhi cheez boli gayi hai ya likhi gayi hai kaise aap usko samajh paa rahe hain machine learning and adaptive learning toh machine learning learning aur adaptive learning ke maadhyam se aap kaise

un cheezon ko samajh rahe hain aur adaptively usko change kar rahe hain. User-centered design for intuitive interaction. Toh user-centered design ke principles ko follow karte hue kaise aap bilkul sahay interaction dono ke beech mein karwa rahe hain yah hamein dekhne ki zaroorat hai. Example ke taur pe agar hum real world mein dekhein toh aaj jaise Chat GPT ek tarah se one of the most popular AI based conversational system hai. Jaise usi tareeke se aap dekh sakte hain Amazon Alexa hai, Google Assistant hai, Chat GPT hai jo alag-alag maadhyamon se alag-alag modality mein aapko conversation karne dete hain agent ke saath aur aapke daily tasks mein alag-alag tareeke se aapki madad kar sakte hain. Bill Gates ne bola tha Chat GPT ek tarah se most revolutionary tech hai pichhle 40 saal mein kyonki vah ab ye jo sanchaar pehle hum natural language mein nahin kar paate the. Free text mein nahin kar paate the. Ab vah bahut aasaani se aap bol ke likh ke alag-alag tareekon se kar paa rahe hain. Toh it revolutionized the way we interact with the machine and make human-like conversation with the AI. Preferably ne bola tha kyonki hamara aim yah hai ki jab pehle jaise human communication system mein do vyaktiyon ke beech mein samvaad ho raha tha, information ka sanchaar ho raha tha. Toh usi tareeke se ab human aur machine ke beech mein bhi usi tareeke se ye saari cheezein hon. Toh jaise example ke taur pe yahaan pe dekh sakte hain. Yahaan pe hum Chat GPT se poochhte hain ki mujhe 7 din ke liye Kerala jaana hai aur mujhe focus karna hai alag-alag landscape culture experience ke upar aur January is the ideal time to visit. Achha ek tarah se ye toh uska response hai. Hamara prashn tha make itinerary for one week in January for Kerala. Toh ek tarah se yah bataata hai ki aap yah cheezein kar sakte hain. Aur ab yahaan pe ye detailed itinerary bataata hai ki pehle din aap yah kar sakte hain. Doosre din yah kar sakte hain. Yahaan pe reh sakte hain. Is mode se jaa sakte hain. Toh ek tarah se isne jitni bhi cheezein ek tarah se isne seekhi thi us hisaab se hamein isne bata diya. Toh Chat GPT ke baare mein hum baat kar rahe the. Toh ek tarah se text-based conversational model capable of question answering tha. But abhi ek tarah se jiske advance model hai vo chat ke beyond image aur multimodality ke upar aashrit ho gaye hain aur aapko usmein bhi madad karte hain. Toh ye context-aware capable of maintaining coherence across multi-turn conversation. Agar hum isko dekhein toh it built upon the transformer architecture GPT with the state-of-the-art natural language processing. Aur ek tarah se aap yah dekhenge fine-tuned on diverse set of wide range of application. Toh ye application education mein aap dekh sakte hain. Customer support mein dekh sakte hain. Content creation mein dekh sakte hain aur alag-alag navachaar mein ideation mein dekh sakte hain. Iske kuchh dikkatein hain. Jaise jo ki zyaadatar LLMs mein hai. Jaise yah hallucinate karta hai aur kabhi-kabhi galat answer bhi deta hai. Nonsensical response deta hai. And requires active management to ensure ki jo bhi uttar yah generate kar raha hai, vah ethically sahi hai. Aur sahi tareeke se ah neetigat tareeke se uska ek tarah se consent liya gaya ho us information ko use karne ke liye ya koi bhi gopneeya jaankaari hum kisi galat tareeke se leak na karein. Usi tareeke se agar hum DeepC ki baat karein Chat GPT jaisa hai but isne ek tarah se aane ke baad DeepC ne aane ke baad ek tarah se Chat GPT ke saamraajya ko ek tarah se hila diya hai yah open-source model hai ye iski sabse achhi baat hai aur jo kaam ek tarah se Chat GPT ne ah bahut kayi billion dollar mein kiya isko unhone keval kuchh million dollar mein hi karke dikha diya toh ek tarah se iske baad isne

inspiration diya aur raasta dikhaaya alag-alag deshon ko ki aap apna khud ka LLM bana sakte hain kyonki uske pehle Sam Altman alag-alag deshon mein jaate the aur bolte the ki bhai aapke toh bas ki baat nahin hai. Aap toh kar hi nahin sakte. Aap bhool jao. Toh ye achhi baat hai. Toh hum apna khud ka LLM ab bana rahe hain. Kayi desh apne apne LLM bana rahe hain. Kayi companies apne khud ke LLM bana rahe hain. Toh aap dekh sakte hain ki key feature DeepC ke multimodal AI supporting both text and code generation excels in question answering content generation summarization and translation and it support ah long context window for in-depth and multi-turn interaction. Toh yah bhi ek tarah se transformer-based architecture hota hai aur it trained on the diverse large scale dataset combining web code academic content aur it optimized for high performance in reasoning coding and multilingual task aur iske bhi applications aur challenges dekhein toh Chat GPT hi jaise hain aur saari cheezon mein yah madadgaar saabit hota hai aur usi tareeke se agar hum Alexa ki baat karein jo ki Amazon ka hai toh ek tarah se yah voice-activated assistant for smart home shopping and entertainment hota hai. Jaise ki aap apne ghar mein baithe hain. Jaise hi aap word Alexa bolte hain toh ye Alexa ek tarah se activate ho jaata hai. Uske baad aap jo bhi prashn poochh rahe hain jo bhi usse bolna chah rahe hain vo usko samajhta hai aur usi hisaab se aapko uttar deta hai. Jaise aapne bola Alexa samay kya ho raha hai? Toh vo aapko bataayega is samay itni taareekh hai. Alexa aaj ka news batao toh ek tarah se aapko news bata dega. Usi tareeke se aap alag-alag kaarya kar sakte hain. Jaise Alexa mujhe yah gaana sunao. Toh it utilizes natural language understanding for interpreting user command. Kyonki user ne Alexa bolne ke baad jo kuchh bhi kiya toh aapko usko samajhne ki zaroorat hai kyonki jab tak aap usko samjhenge nahin aap uske anusaar aap usko process karke information nahin de paayenge toh its skill ecosystem banao third-party developer to extend functionalities toh AI technology ismein ek tarah se dekh sakte hain cloud-based processing hai jahaan pe ASR karte hain jo ki speech ko text mein badalte hain aur text ko speech mein badalte hain aur continuous learning improvement interaction based on user data jo bhi alag-alag user usse interact kar rahe hain jo bhi fail cases hain kyonki kaafi cases mein aisa hota hai ki Alexa aapki baat ko nahin samajh paa rahe hain achhe se toh us case mein aap ek tarah se ye learning ek tarah se satat prakriya hai aur yah chalti rehti hai aur iske application aap dekh sakte hain home automation ho gaya jaise aap yah bhi bol sakte hain Alexa turn on the light Alexa turn on the fan ah Alexa light ko jala do pankhe ko jala do jala do aur usko band kar do weather update dega reminder dega alarm laga dega aur challenges yah hai ek tarah se hamein lagta hai ki hamein sunta rehta hai. Kahin aisa toh nahin hamare privacy private conversation ko bhi ek tarah se ki sunta hai aur uska misuse kar sakta hai. Similar to Alexa Google Assistant hai. Ek tarah se Google ke dwaara vo bhi ek tarah se similar cheez karta hai. Jahaan pe voice aur text interaction with context-aware capabilities hota hai. Yah bhi deep integration with the Google ecosystem jo ki Calendar Map Gmail vagera ke saath interconnected hota hai. It supports multi-turn conversation and the follow-up question. Ek ke baad doosra question poochh sakte hain. Jaise Alexa mein bhi aap aisa karte hain. AI technology ye ek tarah se powered by Google's Bard. But ab toh keh sakte hain ki aur bhi advance model usmein use ho rahe hain. Aur yah bhi ASR TTS aur machine translation vagera machine learning use karta hai personalization ke liye ki aap vo

us hisaab se aapko recommend karega jis tarah ki cheezein aap sunna pasand karte hain. Aur iske alag-alag dheron application similar to Alexa, hands-free device control, real-time translation, navigation, reminders aur iske bhi kuchh limitations hain. Jaise ki limited in-depth conversational capability compared to generative AI like ChatGPT but going forward ye bhi un cheezon ko handle kar raha hai.