Human Computer Interaction (Hindi mein)

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HCI and AI in Conversational Systems: Lecture 12, Part 2

Lec42

[Sangeet] Agar hum conversation baat karein finance ke liye toh application mein iska hum iska finance dekhein toh AI driven system helps with the customer support, fraud detection and financial advice aapke requirement ke hisaab se. Conversational bots streamline banking process like balance inquiry, fund transfer, investment advice, yeh saari cheezein aap ek tarah se AI ko agar aap finance ke kshetra mein use karte hain, uh mudra ke kshetra mein use karte hain toh aap bade achhe se isko kar sakte hain. Ismein key example aap dekh sakte hain jaise Bank of America ka conversational chatbot hai. Usi tarike se HDFC Bank ka aur uske alag-alag naam hai chatbots ke jisko aap us chatbot ke madhyam se aap usse apne prashn pooch sakte hain. What is my balance waghera-waghera. Place a request for cheque book. Toh us tarike se aap alag-alag cheezein kar sakte hain. Jaise Bank of America ke chatbot ka naam hai Erica jo ki a financial assistant that helps user with the bill payment, budgeting, financial insight. Is tarike se aneko dher saare uh examples hain jahan pe ek tarah se finance se related aap apne chatbot ke madhyam se baat kar sakte hain. Toh Andrew Ng jo ki one of the most popular AI keh sakte hain professor hain, Coursera jinhone banaya tha. Aap mein se kaafi logon ne Coursera ko use bhi kiya hoga. Toh Coursera inhi ki company hai. Abhi waise dheron inki companiyan hain aur kai dher saari companiyon mein yeh chief scientist aur alag-alag bhumikaon pe karya karte hain. Toh AI will impact all industry but the impact in finance will be profound kyunki money matters. Toh isi tarike se health care. Health care mein bhi AI conversation system ka bahut hi aham role hai. Agar hum isko dekhein toh AI system provide virtual consultation kyunki raat mein aap bimar hai achanak se aap kahan se kahan se doctor ke paas jayenge toh kya virtual consultation ho sakta hai. Symptom analysis ho sakta hai. Aapke alag-alag jo symptom hai uske basis pe aap pata karne ki koshish karte hain ki aapko kya hua hai. Toh doctor bhi toh wahi karta hai. Alag-alag symptom ke basis pe jo uski knowledge hai woh batata hai. Achha yeh hai toh yeh hua hoga. Yeh hai toh yeh hua hoga. And the patient try. Conversational agent can support mental health remind patient of medication assist with chronic disease management. Ek tarah se iske alag key examples hain. Jaise Babylon Health hai, Woebot hai, Woebot hai. Toh ek tarah se yeh mental health support ke liye ek tarah se CBT advice ko follow karta hai. Toh ek tarah se aap dekhenge toh integration of AI in health care will transform it from reactive to proactive and preventive. Toh ek tarah se hum dekh sakte hain ki AI health care mein ek bahut hi aham bhumika nibha raha hai. Khaastaur pe is tarah ke jo conversational base system aap bana rahe hain. Wahan pe

aap ek tarah se bridge kar rahe hain. Patient aur aapke jo doctors hain, health care executive, health care ke log hain, quick response ke liye, sahi response ke liye aur jaankari kisi bhi samay lene ke liye. Usi tarike se aap alag-alag kshetra mein dekh sakte hain. Chahe woh education ka ho jismein aap dekh sakte hain chatbot ke madhyam se personalized tutoring ho sakti hai. Administration task ho sakta hai. Phir tailor student ka assessment ho sakta hai. Woh ultimately iska task yeh hai ki aap they enhance learning experience by answering student queries and offered tailor content. Toh ka humne Audino ki baat ki thi. Audino mein humne bataya tha jaise kisi bhi lecture video ko aap upload kariye aur phir usse aap alag-alag prashn poochiye toh ek tarah se woh aapke liye tutor ka kaam karega. Virtual tutor ka kaam karega aur aapke saare prashnon ke jawaab dene ki koshish karega. Toh usi tarike se Duolingo ke chatbots hain, edtech platforms ke bhi chatbot hain, woh aap dekh sakte hain. Usi tarike se software engineering mein bhi hai. Toh ek tarah se koi kshetra aisa bacha nahi hai jahan pe aap conversational system AI ka use karke usko aur behtar na bana paaye. Toh usi tarike se software engineering mein bhi yeh ek tarah se aapko madadgaar saabit hota hai usko aur achha banane ke liye. Toh woh aapki madad karta hai bug ko dhoondne mein, code ko suggest karne mein ya jo aapko aage likhna hai aur developer support ke liye aur yeh they can answer technical questions recommend code snippet and facilitate code review. Toh aise dheron example hai code GitHub pe ek GitHub Copilot hai jo ki ek AI powered code completion tool hai jo ki suggest karta hai ki ab humein kya likhna hai kya aage karna hai usi tarike se Stack Overflow Stack Overflow bot hai jo ki humein jo bhi humein dikkato ka saamna karna pad raha hai usko debug karne ke liye humein jo bhi most relevant post hai jo most relevant question hai usse ek tarah se aapki madad karne ki koshish karta hai toh kaafi logon ko darr hota hai ki kahin in automation se hamari sabki naukri toh nahi chali jayegi. Kahin hum less important toh nahi ho jayenge. Toh Martin Fowler ne bola tha automation does not replace developer it makes them more productive. Toh jaise ki hum jaante hain ki Google aur jitni bhi badi companiyan aaj ke time par bolti hain ki unka 20-30-40% jo code likha jaata hai ab AI ke madhyam se likha jaata hai aur isi vajah se keh sakte hain ki jo karya pehle jo karya pehle 100 log karte the ab woh 30-40 log milke hi kar pa rahe hain. Usi tarike se agar hum recruitment ki baat karein, hiring ki baat karein toh AI base conversational system wahan bhi ek wonderful role play karta hai. Jisse ki aap interview virtually kar sakte hain, unka test virtually kar sakte hain. Chatbot ke madhyam se, virtual agent ke madhyam se aap saari cheezein kar sakte hain. Jaise Kairon ek AI powered recruitment assessment hai jahan pe aapki video aur conversational agent ke madhyam se aapka real time interview liya ja sakta hai. Cogni bhi ek tarah se AI tutor hai jo ki personalized feedback aur assessment aapko deta hai. Information retrieval mein bhi usi tarike se uska aham role hai. Conversational agent ek tarah se aapko madad karta hai accurate information nikalne ke liye jo ki vast amount of dataset ya web pages ya details hain aapke question ke madhyam se aur us jo upyog karta hai usko contextually relevant result jitni jaldi se jaldi de paata hai search ki kushalta ko badhane ke liye. Toh jaise example ke taur pe Google search hai NLP base suggestion hai, Wolfram Alpha hai aur agar hum ab baat karein toh ek tarah se hamare paas toh Perplexity AI hai jo ki jo bhi aap prashn poochte hain us prashn ke jawaab mein woh ek tarah se aapko summary bana ke deta hai aur aapko

sources bhi batata hai ki in-in sources se ek tarah se humne yeh uttar liye hain aur aapko aur detail chahiye toh aap isse further follow up question iske baare mein pooch sakte hain jo aapke doubts hain. Jaise yahan pe prashn poocha gaya tha How do large language models work? Toh ek tarah se isne alag-alag sources ko follow karke ek tarah se summary aapko generate karke di. Ismein se ho sakti hai kuch cheezein clear na ho. Toh aap yahan pe yahan pe follow up question pooch sakte hain. Jaise LLM receive an input which can be sequential text or other content. Toh main yahan pooch sakta hoon What do you mean by other content? Kis tarah ka content kaun sa content ki aap baat kar rahe hain toh woh batayega ki haan yeh ho sakta hai woh ho sakta hai. Toh is tarah se agar hum dekhein toh iske jo AI base conversational system hai HCI mein uske dheron benefits hain. Jaise woh upyogkarta ke jo anubhav hai usko badhata hai kyunki woh more natural aur engaging interaction ko support karta hai. Yeh 24 ghante available hota hai, 24 ghante saaton din available hota hai. Uske madhyam se aap continuous support le sakte hain without any downtime. Aadmi hai toh usko rest karna padega, chhutti lena padega. Usi tarike se personalization ki baat karein toh tailored responses suggest based on the user behavior. Jis tarah ke aapke upyogkarta ki zarooratein hain usi hisaab se woh karya karega. Kushalta badh jaati hai. Toh fast resolution of a queries on the task. Toh iske real world example agar hum dekhein toh Zendesk AI chatbot hai jo ki customer support provide karta hai and allowing business to offer instant assistance. Toh ek cheez aur bhi dekhne ki zaroorat hai. Satya Nadella ne bola tha ki AI won't replace human but it can argument our abilities to provide better user experiences. Toh ekdam sahi baat boli hai. Koi bhi jo takneeki samay ke saath aati hai woh kisi ko replace nahi karti hai. Bas humein usko sahi tarike se agar use karein toh hum aur bhi achha karya kar sakte hain. Toh iske aisa toh hai nahi ki saari cheezein achhi hoti hain. Bhai kuch challenges aur dikkato ka bhi saamna karna padta hai humein. Toh jaise is case mein bias in AI jaisa ki humne pehle bhi discuss kiya tha. Ho sakta hai jo aapka AI model kisi purvagraha se grasit ho. Ho sakta hai ki woh kuch keh sakte hain ki purvagraha se grasit ho ya woh kisi bhi tarike se discrimination kar raha ho, pakshpaat kar raha ho toh woh cheezon ko bhi humein dhyan dene ki zaroorat hai. Ho sakta hai ki aapki gopniyata aur suraksha jo hai woh sahi tarike se nahi ho rahi ho toh kaise hum isko sahi tarike se kar sakte hain. Kabhi-kabhi ho sakta hai ki woh context ko jo aap jis context mein aap pooch rahe hain usko achhe se nahi samajh pa raha ho. Uh toh us case mein hum kaise isko aur achha kar sakte hain ki complex user queries aur nuances ko bhi woh achhe se samajh paaye. User trust building and maintaining trust when using AI system woh itna aasan nahi hai. Kaise ek aadmi ek vyakti pe toh bharosa kar sakta hai, lekin kaise main machine pe bharosa karoon? Ek tarah se woh hai toh ek tarah se program algorithm and so on. Toh usi tarike se aap dekh sakte hain ki Microsoft chatbot a conversational agent that had to be shut down due to bias learned from user interaction. Toh ek tarah se isko band kiya. Usi tarike se humne Amazon ke hiring tool ki bhi baat ki thi jisko unhone band kiya. Jab unko pata chala ki yeh female ke prati pakshpaat poorn nirnay le raha hai. Toh ismein alag-alag emerging trends bhi hain. Jaise emotion detection hai, voice driver UI hai, voice driven UI hai, multimodal interface hai aur explainable AI hai. Kaise aap yeh samvaad jo manushya aur technology ke beech mein ho rahi hai, virtual agent ke beech mein ho rahi hai. Kaise usko aap ek maanav se maanav ke

tarah ka samvaad aur sanchaar bana sakte hain. Toh uske liye emotion ko dhyan dene ki zaroorat hai. Alag-alag interfaces jo sampark bindu hai usko dhyan dene ki zaroorat hai. Explainable AI ki zaroorat hai. Kyunki jo bhi AI decision le raha hai. Kaise hum us pe trust karein? Toh humne pichle saptah mein discuss kiya tha ki alag-alag explainable AI ke madhyam se, LIME, SHAP, in sab ke madhyam se aap ek tarah se apne decision making process ko explain kar sakte hain. Jaise Google Duplex an AI capable of making phone calls and having human like conversation for reservation. Toh ek tarah se yeh saare future trends aapko dikh rahe hain. Toh at least humne yeh dekh liya ki kaise human communication system work karta hai aur agar hum uske parallel mein ya uske compare uske liye AI based communication system banate hain toh woh kaisa hona chahiye. Usko kis cheezon ka dhyan dena chahiye is baare mein humne baat ki thi. Toh chaliye ab hum aage jaante hain ki yeh jo alag-alag tarike ke hum intelligent agent bana rahe hain. Yeh intelligent agent kya hamare aavashyaktaon ke anuroop kaam kar rahe hain? Yeh kitna responsible hai? Jaise agar hum kisi manushya ke saath kisi karya ko karne ke liye bolte hain toh woh uh diye gaye karya ko sahi tarike se soch ke hamare hamari gopniyata aur saari cheezon ko dhyan rakhte hue karta hai. Toh kya yeh jo agent hoga woh bhi aadmi ki tarah karya karega? Kya woh bhi usi tarike se karya karega? Toh isliye hum jo intelligent agent ki baat kar rahe hain khaastaur pe jaise humne baat ki aaj ke time pe jitne bhi agent hai virtual agent hai woh multimodal hote ja rahe hain kyunki jo upyogkarta hai unki zarooratein multimodal hai woh khud multimodal hai toh is vajah se multimodal intelligent agent kaafi popular hote ja rahe hain. But uh agar hum unko jis tezi ke saath technology aage badh rahi hai agar hum unko socially responsible nahi banayenge toh Geoffrey Hinton ki baat sahi ho jayegi ki yeh jo multimodal agent hai woh human se bhi zyada intelligent ho jayenge aur ek tarah se woh poore brahmand ke barbaad hone ka kaaran banenge. Toh chaliye jaante hain kaise hum jo multimodal intelligent agent hai unko socially responsible bana sakte hain. Toh jaise humne baat ki thi intelligent agent ek tarah se system hai jo bring the best and the worst of the human imagination. Toh ek tarah se intelligent agent will transform our life health ko education ko rozgaar ko ghar pe jo zaroratein hain smart home banane ke liye, assistant ko woh usmein madadgaar saabit hota hai aur iske darr bhi hain jaisa ki Geoffrey Hinton aur baaki logon ne highlight kiya hai. It will take over and make human extension slave. Kahin aisa toh nahi jaisa ki hum alag-alag movies mein dekhte hain ki yeh jo machines hain yeh ek tarah se hamare manushyon ko uh hamare maanav jaati ko ek tarah se gulam bana lenge. So human superiority will be gone kyunki abhi toh hum un in agent se zyada superior hain, intelligent hai. Hum inko bana rahe hain. But jis tezi se yeh saari cheezein seekh raha hai. Toh going forward yeh ho sakta hai ki human se bhi zyada superior ho jaaye. Tab dekho baat hogi. Toh usi tarike se hum keh sakte hain ki how can we move beyond the vague notion of agent and develop more precise framework that understand intelligent system. Toh agents are defined in 1996. Toh agent ko ka paribhasha ek tarah se diya hai kya? Yahan pe aap dekh sakte hain. Computer system that are situated in some environment and capable of autonomous action in this environment to meet the design objective. Jo bhi design objective hai usko praapt karne ke liye kisi environment mein agar woh autonomous tarike se usko kar pa raha hai toh ek tarah se woh agent hai. OpenAI ne jo ek tarah se jo artificial intelligence mein alag

agent hai unko ek tarah se five levels mein baant rakha hai. Pehla level tha jo ki bahut pehle hi paar ho chuka hai. Chatbot AI with conversational language woh toh already ho raha hai. Doosra hai reasoners and human level problem solving. Aisa abhi hum dher saare problem ke saath kar pa rahe hain. Abhi jo ChatGPT aur OpenAI ki capability hai aur zyada tar jo virtual agent available hai hamare paas woh level three capability mein hai jahan pe agent system can take action. Aap yeh assume karke chaliye jab hum level four aur level five pe jayenge. Level four jo ki innovator AI can add woh khud se innovation karne lagega. Aur level five mein jahan pe organization AI can do the work of an organization itself woh khud ki ek tarah se organization bana ke hum pe raaj karne lagega. Ek tarah se aap aise soch sakte hain. Toh jaise-jaise yeh upar ke level pe jayega woh aur khatarnaak hota jayega. Isliye humein ise socially responsible banane ki bahut zaroorat hai. Toh is vajah se yahan pe aap dekh sakte hain ki Professor Ramesh Jain jo ki kaafi jaane maane researcher hain aur inko ek tarah se multimedia ka pita bhi kaha jaata hai, multimedia research ka pita bhi kaha jaata hai. Toh unhone ek tarah se unki team ke saath yeh article likha hai IEEE multimedia mein jo ki ek tarah se iska 25va sanskaran agar main galat nahi hoon toh. Toh multimodal agent from vision to reality. Pehle ek tarah se bas yeh vision tha. Ab yeh ek tarah se reality mein hamare saamne aa raha hai. Jaise ki pehle jo cheezein hoti thi compact disc to LLM hua, phone to video telepresence hua, TV to streaming on demand hua, email to multimodal messaging for everybody, emergence of GPS, heart rate waghera-waghera hum dekh sakte hain. Toh, agar hum particularly health care ki baat karein toh humein isko dekhne ki zaroorat hai. Kaise yeh multimodal jo agent hain woh health care mein humein madad kar madad kar paate hain. Toh iske liye humein accuracy ko dekhna padega, trustworthiness ko dekhna padega aur apne upyogkartaon se empathy dikhane ki zaroorat padegi. Jismein ek tarah se emotional support hua, personalization hua. Trustworthiness ek trust ke liye explainability aur interpretability honi chahiye aur accuracy ke liye grounded, up to date aur multimodal hona chahiye. Toh is article mein ko aap padh sakte hain jismein detail mein alag-alag foundational metrics ke baare mein bataya gaya hai jo ki iske prabhavsheelta ko human health care conversation based jo chatbot hai ya virtual agents hain unki upyogita unki prabhavsheelta ka mulyankan karte hain. Toh jaisa ki humne baat ki ki abhi hum level three pe hain aur is level pe agar aapko ek conversational health agent banana hai toh kuch is tarike se hoga. User aur doctor honge unke question honge jo ki ek tarah se multimodal, multi language, empathy aur companionship ho sakte hain aur health agent hoga jo usko samjhega usse think karega plan karega aur usko process karega aur health record ek information jo hai ek tarah se us tarah se unko banayega aur wapas answer dega. Toh is tarike se aap dekh sakte hain. Again aap is particular paper ko dekh sakte hain for more details. Kaise conversational health agent system ko ek tarah se banane ke liye inhone ek framework ka propose kiya hai. Toh is research ke madhyam se unhone ek open platform propose kiya jiska naam hai OpenChai. Aap isko dekh sakte hain. Kaise agar aapko health care ke ke liye ek conversational system banana hai toh kuch is tarike se dikhega jismein aap dekh sakte hain alag-alag API ke madhyam se iske jo alag-alag components hain woh usmein madadgaar saabit honge. Yeh inhone health care agent ke liye kiya hai. Agar aapko aise hi educational agent ke liye, chahe customer executive ke liye banana ho

toh aap kaise banayenge? Yeh karya main aapko deta hoon. Aap isko dekh sakte hain. Yeh Chai and OpenChai jo tha ek tarah se uska architecture kaise yeh karya kar raha hai. Level one and two pe aise kar raha tha. Level three aur usse upar ek tarah se aise karega woh aap dekh sakte hain. Aur yeh legend hai iske corresponding. Toh iske main detail mein nahi ja raha hoon. Toh yeh jo research paper aur architecture the aap inko dekh sakte hain agar iske baare mein aur jaankari chahte hain ki yeh uske corresponding ek tarah se QR codes hain. Aap in pe uske GitHub, uske document, uske tutorial aur uske paper ko dekh sakte hain. Toh agar hum wapas apne multimodal intelligent agent ki baat karein usko socially responsible banana hai toh humein dekhne ki zaroorat hogi toh hum isko kaise banayenge? Toh using multimodal intelligent agent in socially responsible application. Toh let's design socially responsible multimodal intelligent agent. Toh ek tarah se aap keh sakte hain isko agar aisa koi aap agent banate hain jo ki socially responsible ho toh aap health care ho, chahe education ho, environment ho ya human right aur social usko wahan pe bade achhe se woh apne upyogkartaon ki ko madadgaar saabit hoga. Unke prashnon ke uttar dene mein, unki zarooraton ko poori karne mein. Toh designing socially responsible MIA to drive positive social change and hold ethical principle and responsibility across diverse social and cultural context. Toh agar hum social media pe ko aaj dekhein toh ek tarah se chaaron taraf tabaahi machi hui hai. Toh it amplifies negative effect. Social media exploits in misinformation, cyber bullying, exploitation yeh dheron tarike ki problem hai. Yeh ek tarah se political aur ideological polarization bhi create karta hai. Aajkal hum dekhte hain aur sunte bhi hain alag-alag research yeh batate hain. Kaise social media ek tarah se influence karte hain voters ko alag-alag voton ke liye unko alag-alag group mein divide karne ke liye. Toh social media algorithms creates echo chambers, filter bubbles and extremist ideologies and isolating groups and making compromise difficult. Usi tarike se agar hum dekhein toh multimodal content spread disinformation toh agar misinformation, disinformation ki baat karein ya ek tarah se samaaj mein ek tarah se hate aur unko baantne ka bhi kaam karta hai. Toh ek tarah se in sab problem ko hum dekh rahe hain. Toh toh is vajah se agar hum in cheezon ko dekhein toh AI could surpass human intelligence. Toh it may evolve beyond human cognitive abilities and outpacing us in intelligence. Samay ke saath agar aise hi aage badhte raha toh yeh sab risk bhi ek tarah se hai. Autonomous decision making could spiral out of control. Jaise agar woh hamare haath se nikal gaya, apne aap decision lene lage. Apne aap saare karya karne lage toh kya hum kar sakte hain? AI agent could turn against the humanity. Agar us pe hum koi control nahi karenge tab toh bahut hi dikkat ki baat hai. Toh ek tarah se jo social media pe tabaahi machi hui hai aur jo existential risk hai AI ke, yeh tabhi sahi ho sakti hain jab hum socially responsible multimodal agent banayein. Toh can we design socially responsible multimodal agent jo ki ensure karega alignment with the human value, promoting fair opportunity, ethical use of personal data and promoting fair opportunities. Toh chaliye hum isko banane ki koshish karte hain. Uske liye humein kin aspect ko consider karne ki koshish karni hogi? Toh hum ek tarah se human being se hi dekh ke usko karenge. Toh jaise perception ki baat hai toh ek tarah se human being perceives through alag-alag jo uske sensors hain shared by the experience toh yeh bhi usi tarike se usko sense karega, process multiple data sources, text, image, on speech, learning kaise

karta hai. Toh ek tarah se flexible learning hoti hai, adapt with the creativity and intuition toh yahan pe bhi ek tarah se data driven hota hai and efficient at processing large datasets. Decision making ki tarah se aap dekh sakte hain. Toh balance logic, emotion and ethics and decision. Usi tarike se agar hum multimodal intelligent agent ki baat karein toh rule based lack more reasoning. Usi tarike se agar hum saare aspect ko dekhein toh humein socially responsible banane ke liye. So can we program to act ethically based on the data and innate uh innate ability to make moral and ethical judgment. Usko as a human as a vyakti usko pata hota hai ki haan yeh sahi hai yeh galat hai aur usi hisaab se woh karya kar sakta hai. Usko pata hai kahan rukna hai. Toh agar hum same cheez apne multimodal agent ko bata paayein sikha paayein program ke through ya jaise bhi toh woh hamare liye best cheez hogi. Toh yahi karya humein karna hai yahan pe social response banane ke liye. Humein isko can we program to act responsibly based on the data. Aur yeh data kahan se aayega? Kaise human act karta hai social apne social responsibility ke liye. Kaise education usmein madad karta hai? Kya-kya cheezein woh seekhta hai? Kya-kya moral values woh follow karta hai? Yeh cheezein ek tarah se humein madadgaar saabit hoti hai. Toh socially responsible is fueled again human to the learning and the socialization. Toh, we can apply similar approaches to cultivate social responsibility in the intelligent agent kyunki yeh hamara aim hai. Toh isko follow karne ke liye best tarika hai ki hum dekhein ki jab robot ko law, robot ka aavishkar hua tha toh log yeh bhi bolne lage ki robot agar aadmi se achha kaam karne lage, robot aadmi ko gulam bana le. Dher saari movies usi ke around ek tarah se thi. Toh Asimov ne ek basic law for robots create kiya tha. Pehla law tha a robot may not injure a human being or through inaction allow human being come to harm. Toh matlab kisi bhi haalat mein jo vyakti hai usko harm nahi pahunchna chahiye. Yeh first law tha. Second law bolta tha a robot must obey the order given by its human being except where such order would conflict the first law. Toh ek tarah se robot ko kisi bhi haalat mein apne jo ek tarah se unko order dene wala boss hai uski baat ko sunna padega. Except pehla jo condition tha pehla jo law tha woh violate na ho raha ho. Aur teesra yeh hai ki a robot must protect its own existence as long as protection does not conflict with the first or second law. Toh ek tarah se theek hai. Aapko robot ko khud ko bhi bachana padega. As long as uh usko uh pehle do jo law humne mention kiye, kisi bhi haalat mein aapko human being ko harm nahi karna hai. Kisi bhi haal mein aapke aapko apne jo boss hain jo jo aapko order de rahe hain unki baat ko sunni hai. Toh usi ko follow karte hue agar hum socially virtual multimodal intelligent agent ki baat karein toh same guiding principle aur secondary principle aur case functioning agar hum karein toh hum jo multimodal agent jo ki abhi ek tarah se bina control ke kaam kar rahe hain woh ek control tarike se ek achhe tarike se kaam kar payenge. Toh humein yeh cheez ka dhyan dena hai ki jo multimodal agent hai should be trained to follow the guiding principle as a core part of their functionality. Ki jab bhi hum unko train karein toh humein yeh ensure karna padega ki yeh jitne bhi guiding principle ki hum baat kar rahe hain usko apne core functionality mein daalein. Usko karna hi hai. Ensuring the alignment with the ethical standard and the societal goal. Usi tarike se if MIA deviates from the guiding principle, it should cease the function until it's debugged. Ab agar woh in guiding principle ke mutabik kaam nahi kar raha hai. For example jo uska human being ko kisi tarike se

harm pahuncha raha hai ya usko bully kar raha hai ya deep fake video bana raha hai samaaj ko baantne ke liye, social media ko ek tarah se humne bataya tabaahi machaane ke liye. Turant usko wahan pe kaam karna band kar dena chahiye. Jab tak ki hum root cause ko pata na kar paayein aur usko sahi na kar paayein. Usi tarike se agar hum secondary principle ki baat karenge toh in addition to core principle the secondary principle will be established to encourage desirable. Jaise yeh toh hona hi chahiye. Secondary ek tarah se agar ho toh achhi baat hai. Enhancing the multimodal intelligent's role in the positive societal impact. Toh alag-alag hum guiding principle ki baat karein toh pehla guiding principle hai similar to Asimov ka jo robot ka principle tha, human welfare and the autonomy first. MIA agent system must prioritize human well being, dignity and autonomy in all interaction ensuring user's right, freedom and emotional need are respected while promoting the integrity of information. Ek tarah se kisi bhi haalat mein aap jo alag-alag upyogkartaayein hain ya aur bhi log hain unko aap neecha na dikhayein. Unko dignity ko maintain karein. Unko kisi bhi tarike se harm na pahunchayein. Is pe humein dhyan dene ki zaroorat hai. Doosra guiding principle jo ki hona chahiye yahan pe nyaaysangat hona chahiye. Equity sabhi ko barabari ka mauka milna chahiye. Aur har logon ko mauka avsar dene ke liye humein dhyan dena chahiye. The MIA agent must ensure that all individual in the groups are treated fairly equitably and actively working to eliminate bias discrimination, harm while promoting inclusive participant in social and cultural dialogue. Third guiding principle hai credibility, accuracy and truthfulness hona chahiye kyunki iske bina aap usko uski baat ko nahi maan sakte. Uske jo bhi response de rahe hain us pe aap trust nahi kar sakte toh ek tarah se ek tarah se MIA must assess, label and promote the credibility of information. It accurate it curates and present ensuring only the verified and truthful accurate content is shared especially in the high stake environment like news, health care and education. Toh jitne bhi sensitive ek tarah se kshetra hai wahan pe usko aur bhi zyada dhyan dene ki zaroorat hai. Keval wahi information ya wahi answer karein ya wahi cheezein provide karein jisse ki kisi ko nuksaan na ho. Transparency and accountability, agar kuch galat ho jaata hai toh kiski ek tarah se zimmedari hogi aur transparent jo bhi decision le raha hai woh ek tarah se ya jo bhi uttar de raha hai woh paaradarshi hona chahiye. MIA system must be transparent in their decision making process and explainable to users ensuring accountability for their actions. Usi tarike se matlab guiding principle toh follow hona hi chahiye. Yeh must hai. Par secondary principle agar aap follow karein toh achhi baat hai. Yeh they encourage karte hain. Toh privacy security control hona chahiye. Toh principle yeh hai ki AI must be adaptable and capable of evolving its ethical guideline as a societal value, laws and ethical standard changes over the time. Empathy and human centered design ko follow karna chahiye. Toh AI must be designed to understand and respond to human emotion and social cues fostering empathy and human connection in its interaction. Toh agar hum future ki baat karein socially responsible multimodal intelligent agent ki toh development of multimodal intelligent agent is crucial turning point at this moment. Agar hum in guiding principle aur secondary principle ko follow karein toh hum usko sahi tarike se control kar sakte hain aur jaise ki hum chahte hain human kind ko ek achhe tarike se sahaj tarike se unke liye ek madad ke bindu ban sakte hain. The potential of create ethical, compassionate and impactful agent is immense.

So we have the opportunity to guide, decide the future of AI and share human responsibility. Chaliye isko karte hain saath mein. So, let's create a future where AI works for everyone inclusive, accessible, jahan pe hum kisi ko koi nuksaan nahi phaila rahe hain. Kisi ko pareshan nahi kar rahe hain. Kisi ko bully nahi kar rahe hain. Koi aisi cheez nahi bana rahe jo disinformation, misinformation ko phailaye. Together we can develop socially responsible multimodal agent that work in harmony with human values and contribute to the greater good. Kaise hum ek achhe vaatavaran ko bana ke logon ki madad kar sakte hain. And the future of AI is in our hand. It's time to build intelligent agent that benefit society in meaningful ways. Toh Professor Ramesh Jain jiske jinhone humein is multimodal intelligent agent ko socially responsible banane ke liye yeh saari slides di unka main तहे dil se shukriya karta hoon aur unhone bola tha towards AI for empowerment and democratization. Isi ke saath yeh project task hai. Adobe ki taraf se aapko diya gaya hai. Yahan pe aap iski detail dekh sakte hain aur iske baare mein aur jaankari yahan pe Adobe Express ke baare mein resources yahan pe available hai aur aap yahan pe yeh feedback form bhi fill kar sakte hain jiske madhyam se aapke koi prashn hai toh Adobe ki team aapko uska uttar karegi aur main aapko strongly encourage karunga ki aap isko dekhein. Is project ko karein, Adobe se contact karein. Kya pata woh aapko ek achhi opportunity de de. Toh iske baare mein aap yahan par detail mein dekh sakte hain. Toh in summary humne pehle human communication ke baare mein baat ki. Uske baad humne AI based conversational system ke baare mein baat ki. Kaise alag-alag takneekiyon ke madhyam se hum uh human ko, vyakti ko ek tarah se sanchaar mein AI agent ke through karya kar rahe hain. Uske baad humne alag-alag core technology ki baat ki. ASR, NLP, text to speech, machine learning. Uske baad humne alag-alag applications ke baare mein baat ki. Uske baad humne ethical concern such as privacy aur misuse ke baare mein baat ki. Future outlook ke baare mein baat kiya. Aur uske baad humne last mein ek tarah se kaise jo multimodal intelligent agent jo ki ab hamari life ke integral part bante ja rahe hain. Jis kisi bhi kshetra mein jaayein chahe woh swasthya ka ho kshetra chahe woh mudra ka kshetra ho chahe woh health care ka kshetra ho wahan pe multimodal intelligent is tarah se hamare jeevan ka part bante ja rahe hain. Aap further reading ke liye yeh jo uh resources hain aap ismein dekh sakte hain aur bhi jaankari aap le sakte hain in topics ke baare mein. Isi ke saath main aapko is course se alvida leta hoon aur main aasha karta hoon ki is course ne aapko Human Computer Interaction ke baare mein ek bahut hi achhi jaankari di hongi aur aap ab is laayak hue honge ki koi bhi Human Computer Interaction system bana sakte hain. Aap design se apne aapko parichay diye honge. Aap ab dekh sakte hain ki agar aapko koi maanav kendrit system banana hai toh aapko kin concept ka use karna hai. Kin tool ka use karna hai aur main poori tarike se aashwast hoon ki ab aap jab kisi company mein karya karne jayenge toh jitni bhi cheezein aapne is course mein seekhi hain, woh aapko ek behtar bhavishya ki aur le jaayengi. Aur isi ke saath main is course se aapse alvida leta hoon. Dhanyavaad. [Sangeet]