Human Computer Interaction (Hindi mein)

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Human-Computer Interaction (HCI) ka parichay: Vyakhyan 1, Bhaag 2

Lec02

To chaliye start karte hain ek brief aur bahut hi saaransh parichay ke baad. Ab hum is course ko start karte hain Human Computer Interaction. Isko hum Hindi bhaasha mein is baar prastut karenge. Aur jaisa ki humne pehle bataya, Adarsh Pandey aur Ritvik Bamba ji, jo ki is course ke liye, is session ke liye humare shikshak sahpaathi hain shikshak sahayak hain woh hume madad karenge is poori learning prakriya ko sugam aur sahaj banane ke liye. So let's get started! To is pehle haftay mein pehle saptah mein hum yeh cheezein cover karenge. Yeh iska ek rooprekha keh sakte hain. Aur ismein hum basically batayenge course structure aur objectives kya hain is course ke. Aapko is course ko karne ki zarurat kyu hai? Kya aap apne real life, apne vyavaharik jeevan mein iska upyog kar sakte hain? Kya iski zarurat hai? Human Computer Interaction kya hai? Kaise human maanav aur computer (koi bhi digital device ho sakti hai) ke beech mein sahaj par prakriya ho rahi hai? Kisi bhi kaarya ko poorn karne ke liye hum ek HCI project banaenge taaki aapki learning process aur aasan ho sake. Hum aapko demo bhi denge kuch sample HCI projects ka, jinko dekh kar aap soch sakte hain agar aapko ek HCI-based project banana ho is course ke saath-saath, to aap kya kar sakte hain. Hum aapko dher saare weekly assignments aur kaarya bhi denge, taaki aap jo cheezein seekh rahe hain unhe use karke apni learning ko dikha paayein aur yeh aapke overall learning process ko aasan karega. Aur humare zyadaatar saptah mein hum tutorials aur weekly assignments karenge. Jaise is saptah hum aapko ek tutorial denge kya good design hai? kya bad design hai? Kya ek accha design hota hai? Kya ek bura design hota hai? Of course, aapka uddeshya hona chahiye ki hume accha design banana hai aur bure design se nijaat paani hai. To yeh saptah aur alag-alag topics hain jo hum is course mein cover karenge. Hum pehle ek HCI ka parichay denge is saptah mein. Agle saptah mein hum batayenge design kya hota hai hum discuss karenge, hum charcha karenge design principles kya hote hain, design thinking kya hoti hai, aur design process kya hota hai. Iske baare mein hum charcha karenge taaki aap samajh paayein ki design ki zarurat kyu hai aur aap kaise in cheezon ko apply karke, inka prayog karke apne jeevan ko aur sugam aur behtar bana sakte hain keval apne hi nahi, dusron ke bhi jeevan ko behtar bana sakte hain. Uske baad hum charcha karenge week three mein saptah teen mein. What is Interaction? Interaction HCI ke pariprekshya mein ek kriya hai, jahan par aap kisi kaarya ko karne ke liye usse interact karte hain paraspar kriya karte hain, baatcheet karte hain. Uske agle saptah mein hum discuss karenge, charcha karenge .User Perspective user ka pariprekshya kya hai, drishtikon kya hai. Kyunki jab tak aap jo upyog karta

hai uske drishtikon ko nahi samjhenge, aap unke liye kuch bhi accha nahi bana sakte. Unke upyog, unke requirements ke according aap kuch bhi nahi bana sakte. Toh yeh samajhna bahut hi zaruri hai.To hum alag-alag techniques ko jaanenge jinke maadhyam se hum unke perspective ko samajhne ki koshish karenge unki zaruraton ko samajhne ki koshish karenge. Uske baad hum interface ki baat karenge kyunki agar aapko interaction karna hai, human (maanav) aur computer ya upkaran ke beech, to unke beech mein kuch na kuch aisa hona chahiye jiske maadhyam se wo interaction kar sakein. To interface ek tarah se wo sampark bindu hota hai jahan par aap ek tarah se unke beech mein paraspar interaction karte hain jise hum antarfalak bhi kehte hain. Aur yeh tangible bhi ho sakta hai aur intangible bhi. Jahan tangible ka arth hai kuch aisa jo aap bhautik taur par dekh sakte hain, mehsoos kar sakte hain. Jaise agar aap computer ke madhyam se kuch likhna chahte hain jab aap apne keyboard ke button ko dabate hain, to ek tarah ka interface hai jo aapne jo bhi likha usse aage bhejta hai. Aage, intangible bhi ho sakta hai jahan pe kuch cases mein, for example, aap ek gesture ke madhyam se koi sandesh ya samvaad sthapit karte hain aur ek simple sa interaction karte hain to yeh ek tarah ka intangible interaction ka udaharan ho sakta hai. To is saptah mein hum in sab concepts ko aur detail mein discuss karenge, alag-alag udaharano ke saath samjhaane ki koshish karenge. Data Requirement Gathering and Analysis hume kis tarah ke data ki zarurat hai alag-alag problems ke liye, jis problem par aap work kar rahe hain, kaise hum usse ikattha kar sakte hain, kya nitiyaan honi chahiye, kya tareeke hone chahiye, kis tarah ka data collect karna chahiye, kitna data collect karna chahiye, aur ek baar data collect ho jaaye to kaise uska vishleshan (analysis) kiya jaaye yeh sab cheezein hum is saptah mein padhenge. Uske baad hum prototype aur smart UI ke upar baat karenge week seven mein. Prototypes ka mukhya kaarya aap bol sakte hain kuch namoone banana. Kyunki agar aap kisi kaarya ko kar rahe hain ek product bana rahe hain to aisa nahi hai ki aap seedha ek bada sa product bana dein, hazaaron-laakhon karodon rupaye laga kar, aur sochein ki log usse use karenge. Kuch validation honi chahiye ki kya hum jo bana rahe hain, woh feasible hai bhi ya nahi. Agar feasible hai bhi to kya log use pasand karenge ya nahi? Kya hum user ke feedback ko le sakte hain ek final product banane se pehle? Isi wajah se hum prototypes banate hain jo ek tarah ke namoone hote hain. Yeh low-fidelity, mid-fidelity aur high-fidelity prototypes ho sakte hain. Low fidelity ka arth hai ki jo bhi aap sample bana rahe hain, woh real product se kitna similar hai, kitna different hai. Low-fidelity case mein aap keh sakte hain bahut hi basic, kachcha namoona hai. Jaise for example, agar aapko ek web page banana hai to ek simple sketch bana dena jisme bataya gaya ho ki "yahaan pe buttons honge", "yeh content hoga", etc. to yeh ek low-fidelity prototype ho gaya. Mid-fidelity prototype thoda aur refined hota hai jo actual product se kuch had tak similar ho. Ho sakta hai ki saari functionalities na ho, lekin basic structure aur feel similar ho. Jaise aap apne sketch ke corresponding ek wireframe bana dein jisme proper buttons, UI elements wagairah ho, and so on.

High fidelity prototype ek tarah se kaafi similar hota hai us actual product ya cheez se jo aap bana rahe hote ho. Of course, usme kuch limitations hoti hain, but ek tarah se yeh ek reflection

hota hai jo aap banane wale ho. Smart UI jaise humne pehle discuss kiya, User Interface ya upyogkarta antar-falak ek contact point hota hai. Kya hum usko aur smart, yaani intelligent bana sakte hain? Aisa jo khud samajh jaaye ki hum usse kaise interact karna chahte hain. Yeh hum iss week mein padhenge. Week 8 mein hum Iterative Design aur Evaluation ke baare mein baat karenge, jahan hum discuss karenge ki iterative design ki zarurat kyu hoti hai, kaise yeh ek better solution aur accha product banane mein madad karta hai. Aur evaluation ke baare mein bhi baat hogi bina evaluation ke hum yeh nahi keh sakte ki jo humne banaya hai, woh waise kaam kar raha hai ya nahi jaise humne socha tha. Jaise for example, agar humne Button A dabaya toh kya woh action waise hi perform kar raha hai ya nahi? Evaluation ke alag-alag methods hum iss week mein discuss karenge. Jaise maine bola, aaj ke time mein hamari life digital devices se ghiri hui hai toh hum Internet of Things (IoT) aur uske HCI ke intersection mein applications ke baare mein baat karenge. Phir hum HCI aur AI ke connection par aayenge, jahan hum large language models ke baare mein bhi discuss karenge. Hum kuch demos bhi denge aur hands-on practice bhi karenge. Next week hum Privacy aur Security ko HCI ke context mein discuss karenge kyunki confidentiality aur data protection aaj ke time mein bahut important topics hain. Agar hum koi product ya service banate hain, toh woh secure hona chahiye. For example, agar aap ek banking app bana rahe ho, toh woh poori tarah secure aur confidential honi chahiye. Aisa nahi hona chahiye ki login credentials leak ho jayein, warna misuse ho sakta hai. Aajkal hamari personal information jaise Aadhaar ya aur personal data multiple websites aur apps par use hoti hai. Toh kya yeh data secure hai? Iske liye RBI jaise regulatory bodies ke kuch strict rules aur guidelines hote hain jinko follow karna zaruri hota hai. Agar aap unhe follow nahi karte, toh aapko penalties aur bans mil sakte hain. For example, Paytm par ek time par allegation laga tha ki woh data securely store nahi karta tha aur apni Chinese partner companies ke sath share karta tha jiske baad unhe penalties aur restrictions ka samna karna pada. Toh aise kai real-life examples hain jo hum discuss karenge. Finally, last week hum HCI and AI-based conversational systems aur unke applications ke baare mein baat karenge jaise Google Assistant, Alexa, Siri, aur ChatGPT jaise voice assistant systems. Yeh systems hamari life ko easier banate hain, information lena easy karte hain aur hamare liye tasks perform karte hain. Iske baad hum aapke final project ke baare mein baat karenge jo poore course ke dauraan aapne seekha hai usko apply karke ek working prototype banane mein madad karega. Hum chahte hain ki course ke end tak aap apna ek project bana pao jise aap showcase kar sako aur seekh sako. Is course ke dauraan hum alag-alag tools aur software use karenge jaise Figma, Miro, Balsamiq, Adobe Illustrator, Adobe Firefly, Arduino, ChatGPT, aur bahut saare others. In sabko hum apne lectures, tutorials aur hands-on sessions mein use karenge. Is course ka main objective yeh hai ki aap Human-Computer Interaction (HCI), User Experience (UX) Design, aur Design Thinking ke beech ka difference samajh pao. Aap user-centered design techniques, data gathering, rapid prototyping, aur design evaluation seekh pao. Aap yeh bhi assess kar paoge ki aapka design useful aur usable hai ya nahi. Finally, aap innovative soch paoge, naye prototypes bana paoge, unka evaluation kar paoge, aur naye design concepts develop kar paoge jo aapke project ka part ban sakte hain. Agar main summarize karun toh is course ke through aap seekh paoge kaise

human-centered products design kiye jaate hain, jinhe har type ke users ,including specially-abled log easily use kar sakein. Aapko inclusive aur accessible design ke importance ka bhi realization hoga. Course ke liye kai recommended textbooks aur resources bhi diye gaye hain, jaise Designing for People by Henry Dreyfuss, aur Interaction Design by Preece, Rogers & Sharp jo bahut popular books hain HCI field mein.

 Donald Norman The Design of Everyday Things. Ek bahut hi aur bahut hi acchi kitaab hai jo ki aapko bilkul padhni chahiye agar aap is course ko dekh rahe hain aur sabse acchi baat is pustak ki yeh hai yeh hamare vyavaharik jeevan mein jo aap alag-alag cheezein dekhte hain wahan pe kaise interaction design HCI ka prayog hota hai. Good design ka prayog hota hai. Bad design ka prayog aap usko visualize kar sakte hain, dekh sakte hain aur usko sahi kar sakte hain. Aur bhi saare dher saare books hain jisko aap dekh sakte hain, samajh sakte hain. To, yeh is saptah ki rooprekha hai. Chaliye start karte hain. Jaise hum start karte hain pehle dekhna ek acchi design kya hoti hai aur ek buri design kya hoti hai. Acchi design wo hoti hai jisko aap sahaj tareeke se bade simple tareeke se aur kaafi intuitive ho. Dekhte hi samajh mein aa jaye karna kya hai, kaise kya karna hai aur galti ke chances bahut kam ho. Aur bad design vah hai jahan par yeh saari cheezein jo humne good design batayi, acchi design batayi vah na ho paaye. Jaise aap is example ke case mein dekh sakte hain. Yahan par do can hai. Aap dekh sakte hain. Pehla jo hai yeh fly and insect killer hai. Same company ke dwaara black and gold. Usi company ke dwaara ek aur product hai jo ki hai canola cooking spray matlab ek tarah se cooking ke liye khaana banane ke liye oil hai. Same company ke dwaara ab is company ke do product hain. Dono same dikh rahe hain. Similar dikh rahe hain. To yahan pe galti ka chance bahut zyada hai ki aap khaana bana rahe hain. Galti se cooking oil ki jagah aap insect killer daal diya to pata chala aap khaana kha ke seedhe hospital pahunch gaye. To galti ke chance yahan zyada hai. To aapke design mein vah cheezein honi chahiye ki aap turant antar pata kar paayein ki yeh kis purpose ke liye hai aur yeh kis purpose ke liye hai. Ek aur dekh sakte hain yahan pe. Ab jaise yahan pe fire hydrant shuruaat mein bana diya gaya. Baad mein logon ne socha chaliye hum banate hain. Agar aap is rail ko dekhein, is railing ko dekhein. Mainly un logon ke liye hai jo chalne mein poori tarah se samarth nahi hain. Inka upyog karke upar ja sakte hain. Jab baad mein yeh socha gaya ki is rail ko banate hain to aap dekh sakte hain usne hydrant ko poori tareeke se raasta hi band kar diya. Ab yeh hydrant to khul hi nahi sakta. To ab is hydrant ka rehne ka faayda kya hua? Ya is rail ko banane ka faayda kya hua? To ek tarah se yeh bhi ek example hai bad design ka. Is case mein dekh sakte hain. "Congratulations you have cancer." Mukhya roop se vyavaharik jeevan mein jab bhi hum cancer bolte hain to cancer se hamara matlab hota hai ki shayad aapko cancer beemari ho gayi hai ya kisi ko cancer beemari ho jo ki ek jaanleva beemari hai. To koi bhi nahi chahta hai ki aapko cancer ho ya aapke kisi shubhchintak ko, aapke mitra ko, parivaar walon ko cancer ho. Agar koi aapko bole "Congratulations you have cancer" yeh to bade surprise ki baat hai. Aap shock ho jaayenge. To yahan par aap keh sakte hain dikkat yeh hai yahan par yahan par cancer beemari ke baare mein baat nahi ki ja rahi hai. Yahan par jo unki raashi hai jise Cancer bolte hain

uski baat ki ja rahi hai. For example yahan pe a summer baby you are born between the dates that's why you have Cancer jo ek raashi hai. To the people always see something positive. To vah ek dikkat hai. To yeh bhi ek example hai bad design ka. Usko humein sochna chahiye kaise hum sahi kar sakte hain. Kya apne vyavaharik jeevan mein aise dher saare examples good design aur bad design ke dekh sakte hain? Aapko kahin door jaane ki zarurat nahi hai. Agar aap kamre mein hain to kamre mein dekhiye darwaze hain, khidki hai, table hai. Agar aap travel kar rahe hain, aap metro dekh sakte hain, bus dekh sakte hain, car dekh sakte hain. Wahan par jo alag-alag design hain kya vah accha hai, bura hai? Kya accha hai, kya bura hai? Agar aap padhai kar rahe hain to wahan par kya cheezein good design hain bad design vah dekh sakte hain. To purpose yeh hai ki aap pehle to pata kariye kya good design hai kya bad design hai. Aap alag-alag characteristics likh sakte hain. Jaisa humne bola kya wo jo kaam aapko karna hai sahajta se kar paa rahe hain nahi kar paa rahe hain. And so on. Similarly agar hum alag-alag website ki baat karein kyunki apne hum vyavaharik jeevan mein hum alag-alag government agencies ya alag-alag private agencies ya alag-alag services ka bhi apne jeevan mein upyog karte hain. Jaise agar aapko for example apne passport ke liye apply karna hai, renew karna hai, pata change karna hai. Dher saari cheezein aap kar sakte hain. To uske website pe jaayenge aur koshish karenge ki cheez... to aap is website mein bhi dekh sakte hain. Kuch cheezein badi acchi hain. Kuch cheezein shayad improve karne ki zarurat hai. Jaise yeh interactive feature hai. Organized content hai. New in is highlighted. Yeh acchi cheez hai. But ismein bahut dher saari cheezein sahi nahi. Jaise non-intuitive menu bahut clear nahi menu kya hai. Too many text colors. Itne dher saare colors hain ki yeh poora rangoli ban gaya hai. Too many details. Bahut dher saare details hain jo ki agar aapko kisi information ko dhoondhna hai to bada samay lagega, bada mushkil hoga. Similarly ek website aap dekh sakte hain MCD online Delhi ki MCD ki website hai. Jaise maine yeh web page November 2024 mein 16 ko November ko khola tha. To yahan pe purani information display ho rahi hai. To outdated information is shown. Kuch feature aise the jo ki kaam nahi kar rahe the. Too much space for posters jaise ki aap keh sakte hain ki baaki information jo ki zaruri information visible nahi hai. To main aasha karta hoon ki agar aap log aise kisi sansthan mein aage jaake kaam karte hain to in sab cheezon pe sochenge aur isko aur sahi karne ki koshish karenge. Yeh continue hua. Jaise agar aap dekhein ki agar maine fir se is website ko khola to May 19 ko aur ispe information mainly jo dikhi ja rahi hai the application deadline has been extended till 31 January jo ki ab kisi kaam ki nahi hai to kya hum again updated information de sakte hain to acchi cheezon ko bilkul humein rakhna hai aur buri cheezon ko aur sahi karna hai yeh hamara uddeshya hona chahiye. Aur bhi website aap dher saare website dekh sakte hain chahe wo Election Commission ho chahe Aadhaar ho chahe dher saare government aur private websites ho jo aap apne vyavaharik jeevan mein use karte hain usko visualize kariye. To is course ka ek uddeshya yeh hona chahiye ki aap jo bhi cheezein aap seekh rahe hain, padh rahe hain, dekh rahe hain, aap apne niji jeevan mein, apne vyavaharik jeevan mein jab bhi aap in cheezon se interact karte hain to aap dekhiye kaise vah kaam kar raha hai. Usmein kya kami hai. Kya agar aap iske banane waale hote to kya sahi karte aur yahi thought yahi koshish aapko navaachar karne ki koshish karega aur aap ek acche developer banenge,

designer banenge, entrepreneur banenge aur bahut hi accha apne jeevan mein aage badhenge aur in sab cheezon ko karte hue aap apne aur logon ke jeevan ko aur behtar sugam accha bana sakte hain. To, let's do this activity. Jab bhi aap apne real world mein kuch bhi cheez dekhte hain, to in sab prashn ko poochiye. Yeh prashn basically aapko help karenge. Kya ho raha hai? Kya hona chahiye? Kya accha hai? Kya bura hai? Kya aap isko accha karne ke liye kar sakte hain? Jaise have you encountered any bad design? Jo bhi aap jaise maine example diya aap apne vyavaharik jeevan mein dekhiye. Kya aapko laga ki kuch cheezein aisi hain jo ki apna kaam nahi kar pa rahi hain, acche se nahi kar pa rahi hain. What are the examples of bad design? Uski wajah se aapko koi dikkat hui?

Jaise kaafi time aisa hota hai shayad aap logon ne dekha hoga kai jagah bank me ya ration lene ke liye bhi aapko apne fingerprint ko scan karna hota hai taaki yeh confirm ho sake ki aap sach me aaye ho ya nahi, aapne samaan liya ya nahi, and so on basically apne aap ko authenticate karte ho. Kaafi time aisa bhi hota hai ki fingerprint scan properly work nahi karta. To ek tarah se usme kuch problem hoti hai, jisse aap apna kaam nahi kar pa rahe hote. Aap apna experience share kar sakte ho. Have you thought about the solution? Ab jab aapne apna experience share kiya, jo problem aapne face ki, agar aapko uska solution banana hota to aap kya karte? Jab bhi hum solution ki baat karte hain, to hum ek se zyada solutions sochte hain ek, do, teen, chaar... ho sakta hai inme se third solution optimal nikle. To jo bhi solution aapne socha, humein sochna hota hai ki inme se best kaunsa hai. Find the best solution. How to ensure that your solution actually solves the problem in need? Humein kisi na kisi tareeke se evaluation karna padega na taaki yeh confirm ho sake ki jo solution aapne socha, woh sach me optimal hai, sach me best hai, aur jo kaam karna tha woh kar pa raha hai ya nahi. Is your solution perfect? Kyunki aap best experience, best anubhav, sabse acchi help tabhi kar sakte ho jab aapka solution perfect ho ya at least near to perfect ho. Agar woh nahi hai, then this is not the end. Jaise ki John Lennon ne kaha tha "Everything will be okay in the end. If it's not okay, then it's not the end." Khaas taur pe jo log movies dekhte hain unhone ye dialogue Om Shanti Om movie me bhi suna hoga Shah Rukh Khan ne kaha tha: "Agar sab theek nahi hai, to yeh the end nahi hai." Ab aage dekhte hain Indicators of bad design: Confusing navigation jaise aap kisi website me navigate kar rahe ho, aur agar navigation confusing hai, to yeh ek indicator hai ki design bad hai. Poor feedback yaani jo feedback user ko mil raha hai, ya mil hi nahi raha, usko check karna zaruri hai. Jaise system clearly indicate nahi karta ki kya action liya gaya hai. For example, agar aap kisi button ko dabate ho, to ideally ek click ki awaaz aani chahiye, ya kuch indication milna chahiye jaise "web browsing in progress", "loading 10%, 20%..." rather than aap confused ho jao ki maine button dabaya bhi ya nahi, kuch ho bhi raha hai ya nahi. To feedback kisi bhi tareeke ka ho visual, audio, tactile agar user ko mil raha hai, to woh ek achhi baat hai.

Agar nahi hai to yeh ek poor, poor feedback ek bad design ka ek bahut hi accha, bahut hi zaruri example hai. Inconsistent design elements normally humein yeh hota hai ki agar hum 10 pages bana rahe hain aur har page alag-alag tareeke se, alag-alag design ke saath hai to bada confusing hota hai. Best tareeka yeh hota hai ki aap consistent rahiye. Jo style use kar rahe hain, jo color use kar rahe hain, jo font use kar rahe hain, usko consistent rakhiye. Jisse usko follow karna aur samajhna easy ho jata hai. To different layout, colors aur style across the interface create karte hain disjoint experience, over complicated interface. Kabhi-kabhi hum kya karte hain? Cheezon ko accha banane ke liye, unhe itna complicated, itna jatil bana dete hain ki woh samajh me nahi aata ki karna kya hai. Clutter, seen too many options, unnecessary features, aur blame the user lack of accessibility, design doesn't accommodate users with disabilities and diverse needs. To humein jab bhi bana rahe hain, humein ek tarah se sabka khayal rakhte hue apna session batana hai, nikalna hai aur dikhana hai. Is tarah se aap dekh sakte hain, long learning curve, bad design agar hoga to inefficient workflow hoga, unclear instructions honge, galti ke chances zyada honge, aur lack of aesthetic appeal bhi hoga. To yeh ek tarah se indicator hai reduce user satisfaction. Kyunki agar jo user in saare problems ko face kar raha hai, to woh satisfied nahi hoga. Woh frustrated hoga, aur yeh kya karega? Yeh cause karega frustration. Frustration badega. Jab aadmi apna kaam nahi kar pa raha hai, satisfied nahi hoga to gussa hoga, frustrated hoga aur discourage hoga ki ab mujhe isko use hi nahi karna hai. Kyunki agar main is system ke through jo kaam mujhe karna hai, kar hi nahi pa raha hoon, to phir kyun use karunga? Aur woh sabse badi problem hai. Agar aap apne product/service ko best tareeke se users ke liye use karwana chahte hain to aapko in baaton ka dhyan rakhna chahiye ki aap apne existing users ko retain kar paayein. Koshish karein ki woh agar use kar raha hai to hamesha use kare. Woh jaaye na yaar, kal ko agar koi aur similar system aata hai to woh uski taraf na jaaye. Woh hamara hi system use karta rahe. Hamare system se, hamare product se satisfied ho aur woh tabhi hoga jab woh aapke system aur usse satisfied ho. Woh frustrated na ho. Right? To humein koshish karni hai aur at the same time humein yeh bhi koshish karni hai ki ek to hum purane users ko retain karen aur naye users ko add karein. Tabhi to aapka growth hoga, tabhi to aapka product ka growth hoga Aapki company ka growth hoga. Aap dher saare logon tak pahunch bana paayenge aur apne product aur system ke madhyam se unka bhala kar paayenge. To ek case study hum dekh sakte hain, good design, bad design ke upar jisko hum tutorial mein bhi thoda aur detail mein discuss karenge. Aap dekh sakte hain ki over the time frame alag-alag samay ke saath alag-alag tareeke ke designs of remote banaye gaye hain. Jahan pe shuruat mein dekh sakte hain, it's too complicated, so many buttons jo ki bada mushkil tha. Isme bhi alag dher saare problems the. To probably jo agla remote aaya, usme economics ke point of view se isko pakadne ke madhyam mein, kyunki ek aap aise rectangle is remote ko pakadna thoda mushkil hai as compare to ye jo agla wala hai, jo ki aadmi ke haath ke design ko consider karte hue isko is tareeke se banaya gaya hai. To probably yahan pe kuch problems ko solve karne ki koshish ki gayi. But phir bhi yahan pe aap dekh sakte hain dher saare buttons and so on. Isme probably is problem ko solve karne ki koshish ki gayi. Yahan pe dekhiye, Netflix aur bhi shortcuts buttons hai. Har baar, kai baar hota tha ki

aap kai buttons dabane ke baad Netflix khol paate the. Yahan pe seedhe Netflix aur YouTube dabaya, ek button dabaya, seedha wo page khul gaya aapke liye, application khul gaya aapke liye. Similarly, I mean, dher saare alag-alag problems ko solve karte hue yeh kaafi bada tha. Isko chhota banaya. Is tarah se aap dekh sakte hain over the time voice interface add kiya aur is tarah se karta gaya. To aaj ke time pe ek tarah se dekh sakte hain ki yeh ek naya remote control aaya hai. Ab to agar aaj ke time pe aap dekhenge to yeh bhi kaafi purana ho chuka hai aur isse bhi bahut hi acche, kam buttons ke saath, better interaction ke saath, sahaj aur simple interaction ke saath naye remote controls aapke TVs aur alag-alag jo upkaran use karte hain, unke liye available hai. To jaisa ki humne prashn kiya ki agar aapko pata karna hai ki yeh remote control jo aap use kar rahe hain, acchi design ka hai ya nahi? Buri design ka hai kya? Koi problem to face nahi kar rahi? To let's ask the same question. Sare questions fir se hum wahi poochte hain. Have you encountered any bad design? Jo bhi remote aap use kar rahe hain, unmein se aap batayein. Aapko koi problem hui? Kya aap bade acche se isko use kar paaye ya koi problem hui? Aap apne experience ko share kijiye aur agar jo bhi problem hui, kya agar aap developer hote, aap banane wale hote to usko kaise karte? Jaisa ki maine bataya, dher saare solutions ho sakte hain, unmein se best kaunsa hai, optimal kaunsa hai, aur ek baar usko mulyankan karein ki kya wo sach mein wo sare kaam kar pa rahe jo usko karna chahiye, aur kya yeh perfect solution hai. Agar perfect nahi hai to this is not the end, you need to keep punaravrutti (iteration) karte rehna. Aur that's why, khaas taur pe human-centered design mein, khaas taur pe manav kendrit design mein aur human-computer interaction mein, iteration, ek punaravrutti ek bahut hi zaruri cheez hai, kyunki aap aisa nahi ho sakta ki ek baar mein hi apne best solution ko nikal paaye. Aapko kai baar punaravrutti karni padegi, user se jo upyog karta hai, unke feedback ko lena padega aur usko sahi karna padega uske aadhaar pe. Similarly aur bhi examples aap dekh sakte hain. To main is example pe nahi jaunga, aap iske baare mein soch sakte hain. For example, aaj ke jo cars hote hain, unme dher saari safety ratings hoti hain, global hoti hai, country-wise hoti hai. To crash test dummy hi hota hai, kehne ke liye, woh for example five-star hai. Kya wo sach mein five-star hai? Kyunki zyada tar yeh bhi ek tarah se alag-alag tareeke ke bias se safar hote hain. Jaise yahan pe aap dekh sakte hain pehle kya hote the? Zyada tar jo car tests hote the, wo pehle se apna dharana bana rakhte the ki isko aadmi hi chalayega, baithne wala jo passenger hoga, female hi hoga, woh drive nahi kar… Again, samay ke saath cheezen badal rahi hain. Koi bhi chala sakta hai, female bhi chala sakti hai, male bhi chala sakta hai, alag-alag log chala sakte hain mote, patle, boodhe, young, har tarah ke log chala sakte hain. To but jo cross testing hoti hai, kya wo sabhi logon ko instruct karta hai? Shayad wo nahi hota. Kya usko hum aur better bana sakte hain? Design bana sakte hain? Is tarah se aap kar sakte hain. To is problem ke baare mein aap sochiye aur vichariye aur main aasha karta hoon ki aap sach mein isse lad seekhenge. Ek aur example ki study aap dekh sakte hain: visually impaired person crossing the road, ki agar ek jo dekh nahi sakta vyakti, usko road cross karna hai to kya abhi ki jo infrastructure hai, abhi ke jo system hai humare paas, uska sahyog karte hain is kaam ko karne ke liye independently, sadak kya woh paar kar sakta hai? Agar nahi kar sakta to kya technology, HCI, AI in sab ke madhyam se hum ek aisa session bana sakte hain, mobile app bana sakte hain ya kuch bhi bana sakte hain

jo ki usko ek independent vyakti bana paaye apne alag-alag dainik jeevan ke kaam karne ke liye chahe wo sadak cross karna ho, chahe wo bus pakadna ho, chahe woh padhai karna ho, chahe usko parivahan/transport station jaana ho, bus ke madhyam se, metro ke madhyam se, and so on, chahe woh chikitsa ke liye koi dawa leni ho, and so on, to dher saari cheezen kar sakte hain. Similarly, aapke jeevan mein kaafi log book padhne ke shaukeen hote hain. To kya abhi itna feasible hai ki aap har jagah moti moti aur dher saari books le ja paaye? Khaas taur pe hum try karte hain to carry light luggage, aur har jagah aap apni book le bhi nahi ja sakte, carry bhi nahi kar sakte. Har jagah aur bhi dher saari limitations ho sakti hain, jahan pe aap apni books nahi padhte. To us case mein aapko apne shauk ko maarna padega, kam karna padega. But kyun karein? Mujhe book padhna pasand hai, to mujhe padhna hai. Agar main book nahi carry kar sakta to aaj ke digital era mein kya koi session ho sakta hai jo ki mujhe usko digitally karne ki sahuliyat de? To again, reading books ke madhyam se dher saare booking readings hain. Aap dekh sakte hain jo aapko enable karte hain, aapko ek similar experience provide karne ki koshish karte hain. Jaise aap book padh rahe hain, to book mein bookmark lagate hain. To is booking app mein bookmark, jab bhi aap book padhte hain, kuch words ko aap highlight karte hain. Is tarah ke books mein bhi aapko digital books mein highlight karne ki koshish karte hain. Similarly, jab aap book padhte hain, beech mein ek marker lagate hain ki abhi tak main yahan tak padha hoon. Paper lagate hain, to yahan pe ek tarah se is reading app mein bhi ek tarah ka marker aur is tarah ka chinh lagane ki aapko sahuliyat deta hai. To again, hamara purpose HCI course ke madhyam se hai ki kaise hum isko human-centered bana sake. Jaisa vyakti apne real life mein, apne vyavaharik jeevan mein jaise bhi use karta hai, kya hum similar knowledge ko yahan par usi tareeke se use kar sakte hain? Kyunki agar aap usko alag tareeke se present karne ki koshish karenge, to yeh user ke liye mentally difficult hoga aur unnecessary naye cheezen karne ka. Jaise agar aap book reading ke example, humne diya, book reading ke liye to bookmark jaisa hota hai, to usko bookmark hi boli… To again, hum alag-alag adhyay mein hum usko padhenge to usko bookmark hi boli, usko highlight hi boli. Usko us tarah ke feature provide kariye, and so on. Similarly, dher saare aap log gym ke enthusiasts ho sakte hain, khelne ke shaukeen ho sakte hain. Jo bhi sessions hain aaj ke time pe, unko visualize kijiye, unko dekhiye aur us hisaab se implement kijiye. Garmiyon ka samay hai, chhutti ka samay hai, aur aap sab log jana chahte hain, lekin kya aapko ticket mil pa raha hai? Abhi vyavaharik jeevan mein ticket kaise liya jata hai, aur kya digital solutions ne is process ko pehle se behtar banaya hai? Mujhe woh samay yaad hai jab online booking utni common nahi thi, aur logon ko lambi-lambi line mein lagna padta tha ticket lene ke liye. Ab IRCTC aur alag-alag apps ke madhyam se yeh process thoda easy ho gaya hai, lekin abhi bhi isme kai limitations aur kamiyan hain, jo aap shayad notice kar paaye. Jab aap in organizations mein kaam karte hain, to booking aur travel tickets ke process ko dhyan se observe kijiye, same questions poochiye aur discuss kijiye. Yeh aapko is course ko samajhne mein help karega, iske objectives ko samajhne mein aur sabse badi baat, jo cheezen aap seekh rahe hain, unko apne vyavaharik jeevan mein apply karne mein. End of the day, jaise maine bola, hamari zindagi ki saari cheezen interactive hoti ja rahi hain. Hum human-to-human communication aur interaction ko ab human-to-system interaction ke context mein dekh rahe

hain. Pehle ek vyakti ticket book karta tha ek aur vyakti ke madhyam se, ab wahan ticket book karne wala vyakti replace ho gaya hai ek app ke through, jaise IRCTC. Ye ek interactive system hai jo human-digital interface aur device ke beech interaction facilitate karta hai aur aapke kaam ko complete karta hai. Ek aur example lein driving license renewal aur creation ka. Pehle aap RTO office jaate, physical forms fill karte, bank jaate paise transfer karne, forms submit karte, aur phir processing hoti thi. Ab ye saari cheezen online ho rahi hain. Wahan par jo person service provide kar raha tha, ab wo replace ho gaya hai ek interactive system ke through. Ye system aapke saath communicate karta hai, control karta hai, data manipulate karta hai aur turant feedback provide karta hai. Jaise paisa transfer karte hi, aapke paas instant message aata hai: "X amount transferred from Y to Z." Goal of interactive systems ye hai ki seamless aur efficient user experience create kiya ja sake. Advanced user experience ko improve karna aur align karna zaruri hai. User ki needs aur objectives ko samajhkar system ko align karna bahut important hai, warna user frustrate hoga aur system use nahi karega. Isliye, user-centered design zaruri hai, jahan human ko center mein rakhkar uski requirements aur goals ko dhyan mein rakha jaye, aur system ka feedback turant aur clear ho. Communication bi-directional honi chahiye, ek tarfa nahi, taki user ko pata chal sake ki kya ho raha hai aur system se kya response mil raha hai Adaptability, engagement and usability. So examples in website, mobile app, graphic user interface, dher saari cheezen aap apne real life mein vyavaharik jeevan mein use karte hain. Woh mobile se leke alag-alag machines, alag-alag computers, alag-alag systems aap dekhte hain. Jaise Alexa aap use karte hain, Google Assistant use karte hain, video games dher saare hain. Virtual and augmented reality, interactive data visualization aage ke hafte mein hum virtual reality aur augmented reality ke baare mein bhi briefly baat karenge. So augmented reality mein primarily aap keh sakte hain yeh hota hai ki jo real duniya hai, jo vastavik duniya hai, uske upar kuch hum computer-generated information ko impose karte hain, overlay karte hain. Jaise kaafi logon ne example ke taur pe dekha hoga, go one of the very popular games, toh usme aap ek jagah se doosri jagah jaate hain aur wahan par ek tarah se aapko mobile par khazana dikhta hai. Dher saare aur examples aap dekh sakte hain. Jaise aap mein, kaafi log Snapchat use karte hain, Instagram use kar sakte hain, alag-alag filters use karte hain. Us pe. Toh woh filter kya karta hai? Aapne jo picture li hai, us par kuch alag-alag tarah se information overlay karta hai, jaise aadmi ko billi bana deta hai upar se, and so on. Alag-alag funny cheezen hain jo aap karte hain. Toh uska example hai. Virtual reality ke case mein, virtual jo ki aabhasi hai, reality jo ki sachai hai, toh aapko ek computer ke through generate kiya hua 3D environment banata hai, jismein ek tarah se poori tarah se krtrima hota hai aur aap usme uske part ho jaate hain aur usse interact karte hain, jo ki aap dekh sakte hain. Aur uske dher saare examples jaise hain, jaise aap keh sakte hain ki Oculus jo aap pehente hain, Oculus pehen ke fir aap poori tarah se 3D duniya mein chale jaate hain. Jaise aap slide kar rahe hain, aap jung mein ladai lad rahe hain, aap jungle mein ja rahe hain, sher ke saath khel rahe hain, and so on. Alag-alag cheezen kar sakte hain. Toh yeh activity aapke liye hai. So we, digital interactive product, do you use in your daily life? Apne vyavaharik jeevan mein jo bhi aaspaas mein upkaran, product use karte hain digital, yeh prashn aap poochiye aur batayiye. Kitna usable hai woh? Kya woh aapke jo kaam hain, woh kar pa rahe

hain? Kitna aasaan hai aur kitne kam prayatn ke saath, aur kitne enjoyment ke saath aap usko use kar pa rahe hain? And discuss agar aapko banana hota, toh aap isko aur better kaise bana paate usability point of view, enjoyable point of view, easy-to-use point of view, aur effortless point, matlab bahut hi kam mehnat ke saath, bade aasani ke saath aur enjoyment ke saath, aap kaise use kar sakte hain. To achieve this, we need to be able to understand how to reduce the negative aspect. Kyunki jab tak aap negative aspect ko identify nahi kar paenge, aap usko door nahi karenge. Toh sachai ye hai, jaise frustration, annoyance, nuisances toh woh pata karna padega ki kis cheez se jo user hai, usko frustration ho raha hai. And insing the positive ones aur jisse ki negative cheezon ko hataaye aur positive cheezon ko aur behtar banaye aur add karein. Jaise ki enjoyment ho, efficiency ho, simplicity ho, is tareeke se. Toh case study aap dekh sakte hain jaise maine bataya ki dher saare digital voice assistants aaj ke time pe hain. Google Assistant hai, Alexa hai, Siri hai aur bhi dher saari cheezen hain. Toh kya woh kitna usable hai? Kitne acche se aur kitne efficiently aap use kar sakte hain? Jaise ek example ke taur par main bataun, jaise Alexa, Google Assistant aur is tareeke ke jo voice assistants hain, kyunki inke banane wale jyadatar America aur alag-alag deshon se hain, aur unka mukhya jo language ek tareeke se hai, aap keh sakte hain, angrezi bhasha hai, toh unke aur jyadatar jo data bhi available hai artificial models ko banane ke liye, woh English language mein available hai. Toh is tareeke ki jo voice assistant base system hai, jisse aap English mein baat karte hain, toh shayad thoda acche se baat hoti hai. But agar aap aur bhi local language mein baat karni chahte hain, toh shayad woh aapko acche se samajhta nahi. Dher saare aap YouTube pe videos dekh sakte hain, jahan pe frustration ke saath aap Google, Alexa aur baaki Siri ke saath baat karna chahte hain, Hindi mein, Marathi mein, Tamil mein, nahi kar paate hain, kyunki woh aapki language ko nahi samajhta. Aur toh aur, aisa nahi hai ki woh English mein bhi bade acche se karta hai, kyunki speech, English ya jo bhi language hai, woh keval content nahi hai. Yeh keval yeh nahi ki aapne kya bola, yeh is pe bhi kaafi had tak nirbhar karta hai ki aapne kaise bola. Jaise American accent mein jab aap koi English sentence bolte hain, woh kaafi alag hota hai as compared to jab aap usko English Indian accent mein bolte hain, Chinese accent mein bolte hain. Toh AI model khaas taur par shuruaat mein bahut badi samasya thi. Ab toh woh kaafi had tak usko saral kar pa rahe hain, sahaj kar pa rahe hain, solve kar pa rahe hain. But abhi bhi kaafi improvement ki zarurat hai. Aur bhi aap dekh sakte hain, digital map pehle ek jagah se doosri jagah jana hota tha. Dher saare problems hote hain, har chauraha pe ya pan wale se, chai wale se, bhaiya, yahan jana hai kaise jaaye, wahan jana hai kaise jaaye, bola aage se left, peeche se right, aise jana hota tha. Badi mushkil hoti thi. Ab digital app ke madhyam se, digital map ke madhyam se, woh kaafi aasaan ho gaya. Aapko koi reliance nahi hai kisi ke upar ki poochna hai. Aap simple map follow karte hain aur sabse acchi baat yeh hai ki yeh real-time mein bhi update hota rehta hai. Agar kisi raste mein aap dekhte hain ki accident ho gaya ya traffic hai, toh aapko alternative route bhi suggest karta hai ki aap idhar se ja sakte hain, idhar se jaane ki bajaye. Aap is route se jaenge toh aapko itna time lagega, idhar se jaenge toh itna time lagega, idhar se jaenge toh itna toll lagega, udhar se jaenge toh itna toll lagega. Toh aap apne convenience ke hisaab se, apne requirement ke hisaab se, apne mode ke hisaab se ja sakte hain. Jaise yahan pe real-time, maine bataya ki chalte-chalte jab aap

start kiya aapne apni yatra, toh yeh route better tha. Lekin samay ke saath usne bola ki yeh naya route ab aa gaya hai. Is problem, jo doosra rasta tha, uska traffic clear ho gaya hai, aap iske ja sakte hain. Toh is tareeke se aap dher saare dher saare maps dekh sakte hain Apple app, Google Map aur many others. Similarly, digital payment app aap dekh sakte hain. Again, main iske ab detail mein nahi jaunga kyunki humne dher saari cheezen discuss ki hain. Matlab samay ke abhaav ke kaaran, main chahta hoon ki aap in sab cheezon ko visualize karein, discuss karein, apne mitron ke saath discuss karein. Apne parivaar walon ke saath discuss karein aur isko aur visualize karein. Jaise aap Paytm, PhonePe aur Cred, dher saare digital payment apps hai. How usable they are? Kitne acche se woh apna kaam, jo karna chahiye, kar pa rahe hain? Kitna easy aur effortless aur enjoyable tareeke se use kar pa rahe hain? Agar aapko banana hota jismein kuch cheez better karna hota, toh kaise kar paate? Ab jaise digital payment ke liye ek one of the very interesting, jab PhonePe, Paytm ye sab start hua tha, toh pehle aapko mobile number dalna hota tha, kisko aap pay karna chahte hain. Usmein galti hone ke chances bahut zyada the, right? Toh us case mein fir unhone contact se hi directly number enable kiya. Uske baad fir bhi, agar aapko kisi ko paisa transfer karna hai, toh bada lamba choda process tha. Kya hum kar sakte hain? Simple QR code scan karke paisa dal sakte hain. Woh thoda easy hua. Usmein bhi fraud hone lage, jaise aap dukaan pe hain, aapne bol diya ki bhaiya, maine scan karke paisa dal diya, usko pata nahi chala. Tab wahan pe unhone sound system introduce kiya, ki jaise hi aap kisi ko paisa dalenge, toh fir bolta hai "₹10 prapt hue". Toh is tareeke se aap dekh sakte hain ki wahan pe usko aur secure, easy aur convenient, aapke users ki zarurat ke hisaab se, jaise dukandaar ki zarurat ke hisaab se, ab woh bolne laga, jab bhi aap paisa dalte hain, usko sunai deta hai. Toh feedback hoga, usko mobile phone khol ke ab check nahi karna padega ki haan sach mein ₹10 aaye ki nahi aaye. Usko thoda aur interesting banane ke liye ab kya karta hai, ki pehle woh AI generated computer generated voice ke bajaye, ab usko Amitabh Bachchan ke voice mein bolta hai, "Bhaiyon aur behno, ab aapko Paytm pe ₹10 prapt hue". Matlab again example ke taur pe bol raha hoon, aap dekh sakte hain. Jaise ek aur example aap dekh sakte hain, digital running app, yahan pe ek Google ka bada popular project tha. Project guideline, us case mein unhone in mahashay ko, jo ki dekh nahi sakte, but running ke kaafi enthusiasts hain, marathon se leke saari cheezen daudte the. Pehle unko daudna hota tha, toh ek keh sakte hain ki jaise guide dog tha, guide jo ki aap usko pakad ke daudte the, woh aap, aap rassi se fir uske peeche bhagte, lekin kaafi convenient aur kaafi accha bhi nahi lagta unko ki woh independent tareeke se run kar pa rahe hain. Toh Google ne basically yeh project guideline banaya, jiske madhyam se again AI aur basically HCI aur human-centered design tareeke se unhone bataya ki aap is tareeke se daud sakte hain. Aapko left daudna hai, right daudna hai, saamne koi obstacle hai ya nahi, is tareeke se aap kar sakte hain. Iske baare mein aap aur bhi details unke website pe check kar sakte hain. Travel app ke liye kar sakte hain, credit card payment ke liye kar sakte hain, and so on. Toh is tareeke se, pratham adhyay ka yeh pehla part ko hum yahan pe khatam karte hain aur aasha karte hain ki aapne kaafi kuch seekha hoga. Aur main aapse aasha karta hoon ki aap apne vyavaharik jeevan mein alag-alag cheezon ko dekhein good design, bad design, interactive design. In sab ke baare mein bhi soein, visualize karein, problem ko soein, solution ko soein aur dekhein kitna

easy hai isko use karna, kitna difficult hai use karna. Agar aap hote, toh kya karte? Yeh saari cheezen karein aur jo humne points alag-alag case study ke madhyam se, activity ke madhyam se discuss kiye, aap jo bhi problems choose karenge, us pe usko fit karke, usmein align karein aur uske acche-bure points nikaalein aur seekhein. Dhanyavaad.