Human Computer Interaction (Hindi mein)

Professor Rajiv Ratn Shah

Department of Computer Science and Engineering
Institute IIT Madras

Human-Computer Interaction (HCI) ka parichay: Vyakhyan 1, Bhaag 4

Lec04

Chaliye is activity ko dekhte hain. Jaisa ki hum baat kar rahe the ki aajkal hum physical world se digital world ki taraf jaate ja rahe hain. To ek, let's take an example of applying for a driving license. Aap mein se kaafi log driving license le rakhe honge pehle se jo ki shayad pehle form fill kiya hoga, RTO gaye honge aur uske baad usko liya hoga. But again humein pata hai ki ek lamba process hai. To kya hum ye sab cheezein online kar sakte hain? To digital transformation ke through aap dekh sakte hain. Yeh humein convenience deta hai, humare paise ki bachat karta hai, humein global reach deta hai. Hum door baithe-baithe saari cheezon ko kar sakte hain. Again, jaisa ki humne bataya, koi bhi cheez free mein nahi milti hai. Aapko uski keemat chukani padti hai. To is case mein yeh privacy, accessibility aur social impact ke keh sakte hain ki nuksaan ho sakte hain. Social impact ka nuksaan yahan pe kaise ho sakta hai? Ek example aap soch sakte hain. To pehle jo RTO dher saare logon ko naukri deta tha, wo kam logon ko naukri deta tha kyunki zyadatar kaam aap ek tarah se software ke madhyam se bhi ho ja raha hai. To uska ek social implication aur social impact aap dekh sakte hain. Ho sakta hai. Similarly, ordering food and groceries. To us case mein aap dekh rahe hain ki digital transformation hota hai. Kaafi aap alag-alag tarike ke app use karte honge, chahe Uber Eats ho, Zomato ho, Swiggy, Blinkit, JT ho, chahe vah BigBasket ho, alag-alag tarike se. To iske fayde hain ki aapko ek acchi deal mil jaati hai, aapke convenience hota hai, aapko jaane ki zarurat nahi hoti hai, global reach hota hai. Social impact yahan pe ek tarah se dekh sakte hain jo kirane ki dukaan hai. Ab ek tarah se unki naukri, unka market ja raha hai, unko pareshani ka saamna karna pad raha hai. Aur good cheez yeh ho sakti hai ki aap keh sakte ho ki jo kuch log berozgaar hain, unko saman laane-pehunchane ka ek tarah se naukri mil rahi hai jo ki kaafi log berozgaar the. To har cheezon ka kuch achha aur bura pehlu hota hai. Hamara purpose hota hai ki hum acchi cheezon ko aur acchi karein, buri cheezon ko hum kaise aur acchi kar sakte hain uske baare mein vichar adhyayan karne ki zarurat hai. Unko aur bhi better opportunity dene ki zarurat hai. Is tarah se hum kar sakte hain. To digital transformation ke yeh sab ek tarah se pehlu hain. Humein dekhne ki zarurat hai. Ubers jaisa humne bataya, Zomato bataya, Swiggy bataya. To aap jo bhi inmein se app use karte hain ya nahi bhi karte hain, jo bhi app use karte hain uske baare mein aap dekhiye ki kaise wo pehle physical world mein hota tha aur ab kaise wo digital world mein hota hai. Physical world se jo digital world ka transformation hai, woh kitna accha hai, woh kitna sugam hai ya usmein kuch aur cheezein sahi karne ki zarurat hai, to jo jo pichle vyakhyaan mein humne detail mein alag-alag

prashn pooche the, uspe apply kariye: kya woh saari cheezein abhi kar pa raha hai, kya usko aur improve karne ki zarurat hai. Yeh cheezein aapko dekhne ki zarurat hai. Similarly, education ke baare mein alag-alag companies hain, alag-alag sessions hain, Byju's ab toh keh sakte hain bankrupt ho gaya hai, but Physics wala accha kar rahe hain. Careers ke baare mein aap dekh sakte hain. Khan sir bhi acche kar rahe hain. Unacademy yahan pe hai, Chegg jo ki aap dekh sakte hain ki ek company thi US mein, khaas taur pe yeh alag-alag vidyarthiyon ko unke assignments, unke kaam ko karne mein madad karti thi. Khaas taur pe ChatGPT ke aane ke baad aap dekh sakte hain, yeh lagbhag lagbhag 98.5% pichle 4-5 saal ke andar iska valuation down ho gayi. Pehle jiski valuation jo pehle kai billion dollar thi, ab yeh keval kuch million dollar reh gaya hai aur yeh band hone ki kagar pe hai. To digital transformation se kai cheezein acchi hoti hain, kai cheezein buri hoti hain. Kuch logon ke liye acchi hoti hai, kuch logon ke liye usi samay buri hoti hain. To kya jiske liye hum nuksan kar rahe hain, kuch aur accha kar sakte hain? Woh sab saari cheezein hum continuous process hai, jo ki humein dekhne ki zarurat hai. To education mein again, hum digital transformation ke through kaise madad kar sakte hain bachchon ko achhe se padhai karne mein, jo cheezein unko clear nahi, usko samajhne mein. Ek example main doonga jo ki aap Karan pe dekh sakte hain. Karan mein humne kya kiya, Audino mein dekh sakte hain: kabhi-kabhi aisa hota hai ki aapke paas 2 ghante ke ek ghante ki video hoti hai. Aapko ya is course ke madhyam se hi aap dekh sakte hain. For example, aapke paas 12 hafton ka video pada hai. Ab aapko dhoondhna hai ki sir ne ek baat discuss ki, kis video mein hai? Agar main bolta hoon example ke taur pe, is course mein 35 ghante ka aapke paas vyakhyaan hai. Ab us 35 ghante mein kaha pe sir ne bola tha? Main kaise dhoondhoon? Kaise main us baat ko fir se sunoonga? Bada mushkil hai. Ek tarika hai, aap sunte jaayein, fir se saari cheezein dhoondhte jaayein. Kahan pe hai? Paagal ho jaayenge. Aapko milega nahi. To uska better tarika kya hai? Agar hum aaj ke samay par jo krtrima buddhimta hai, LLM hai, uska use karte hue, is video lecture se hum samvaad kar paayein, usse pooch paayein: "Where this particular topic has been discussed?" To aapke liye bahut aasaan hoga. To aap Audino ke website pe jaake dekh sakte hain, wahan pe koi bhi lecture video upload kar sakte hain aur usse samvaad sthapit kar sakte hain natural language mein, jo aapki sahaj bhasha hai. Aap pooch sakte hain: "Is video mein is topic ko kahan discuss kiya gaya? Kya aap is video ki summary bana sakte hain? Kya is video mein is prashn ka uttar de sakte hain?" To aap Audino ko try kariye aur uska labh lijiye. Audino krtrima buddhimta ke madhyam se aap video se samvaad kar sakte hain, video se pooch sakte hain, video ki summary bana sakte hain, video ko ek bhasha se doosri bhasha mein convert kar sakte hain, jisse ki aapko alag-alag tarike se uska labh hoga. Jaisa ki humne bataya, finance jo ki humare jeevan ka abhinn ang hai, woh bhi ab isse achhuta nahi rah gaya hai. Aap mein se kuch log share market ke enthusiasts honge, alag-alag applications hote hain: Zerodha, GS aur Screener, Tijori jo ek tarah se vishleshan ka kaam karte hain, JEL One aur dher saare aur bhi applications hain jo aapko share market se kharid-dari, den-dari karne mein madad karte hain. Pehle aap dekhte the, jab bhi aapko koi share kharidna hota tha, ek bond type ka hota tha. Aapko aise kuch kharidna hota tha aur isko bechna hota tha. Uski kharidne aur bechne ki prakriya badi lambi hoti thi aur utna aasaan nahi. Aaj ke time pe aap real-time mein apne kisi bhi stock ko

kharid sakte hain, turant bech sakte hain, turant usse laabh le sakte hain, faayda kama sakte hain aur nuksan bhi kama sakte hain. To ek tarah se dekh sakte hain ki yeh bhi digital transformation ke madhyam se aap dekh sakte hain, iske fayde, nuksaan kya hai. Aap dekh sakte hain, jaise hum education ke baare mein baat kar rahe the, to Tijori hua, Screener hua, alag-alag application hua. Iske madhyam se aap alag-alag stock ke baare mein adhyayan kar sakte hain: kya accha hai ismein, kya bura hai, is stock ka ab tak performance kaisa raha hai, uska PE ratio kya hai, uska alag-alag cheezein, profit kitna hai, loss kitna hai, kaisa grow kar raha hai, kiska share holding kitna hai, vagairah-vagairah. Alag-alag cheezein aap in cheezein se seekh sakte hain, jisse aap ek informed decision le paayein: kisko aapko kharidna hai, kisko nahi. Again disclaimer: yeh saari cheezein financial, apne advisor se baat karke, inhe yahaan main yahan pe mera koi lena-dena nahi hai Chaliye ab jaante hain aur kya hai SCI? So SCI jaise humne bataya Human Computer Interaction, manushya aur computer ya usse tarike ke jo upkaran hai uske beech mein jo paraspar samvaad hai, paraspar kriya hai, uske baare mein hai. To yeh explore karta hai Intersection of Technology and Human Behaviour. Kaise koi bhi human kisi bhi technology ko use karke kisi bhi kaam ko karta hai. To yeh aap ek tarah se dekh sakte hain ki yeh crucial field hai aaj ke technology ke zamaane mein aur iske rapid evolution se khaastaur pe jo digital transformation humne baat ki, digital transformation, digital technology hai. SCI plays a bahut hi important role in creating user-friendly, jo upyogakarta ke madadgar ka kaam ho sakti hai, efficient system jo ki kaafi kushal pranali hogi, impacting alag-alag industry kaise usko prabhavit karti hai, education se leke health care se leke entertainment se leke e-commerce, even jang ki baat jo abhi humne ki thi, to aap keh sakte hain ki Steve Jobs ne sahi bola tha na. To design is not just what it looks and feels it. Design is how it works. To agar hum is baaton pe dhyan dein aur same cheez Steve Jobs ne apne Apple company mein lagu ki aur aaj hum dekhte hain ki Apple kitni badi company hai jisko Steve Jobs ne aaj is level par laya. To agar hum iski formally baat karein to SCI ka jo definition hai: The study and design. Kis tarah se yeh adhyayan aur iska jo design hai, how people interact? Kaise log jo hain paraspar kriya karte hain computer aur jo other technology ho sakti hain. Jaisa ki maine pehle bhi bola tha, yeh technology keval computer tak simit nahi hai. Yeh ab alag-alag upkaranon tak lagu hota hai. Chahe woh mobile phone ho, chahe woh alag-alag upkaran ho, variable device ho, so on. To yeh isko ek effective, efficient aur enjoyable banata hai. Yeh is baat par bhi dhyan deta hai ki kaise yeh jo interaction, jo paraspar kriya ho rahi hai, to kaise hum usko kaafi kushal bana sakte hain. Kaise hum usko kaafi prabhavkari bana sakte hain aur kaise usko prayog karte hue aap enjoy kar sakte hain. Uska manoranjan lete hue karte hue, ah kar sakte hain. Manoranjan banane ka main uddeshya yeh hai ki aap usko use karte samay frustrate na ho. Aap pareshan nahi ho. Yeh ek zabardasti jaisa nahi hona chahiye. Yeh khud aap enjoy tarike se, enjoyable tarike se karna chahiye. Jaisa ki maine for example order ke baare mein bataya. Us samay aapki jo seekhne ki prakriya aur aasaan ho jaayegi. Ab aap jo bhi prashn aapke dimaag mein aate hain, natural language mein, sahaj bhasha mein aap turant usse chat agent ke madhyam se pooch sakte hain aur video ke madhyam se woh uska uttar dega. To ek tarah se aap keh sakte hain woh ek tarah se aapke liye ek intelligent teacher ka kaam karta hai jo ki aapke man mein jo bhi prashn is video vyakhyan ke baare mein aa rahe hain, woh aapko

batata jaayega ki dekho, isme yeh discuss hua, yahan pe discuss hua. Isme jo professor the usne uska answer aise kiya tha, waise kiya tha aur sabse acchi baat, large language model jo ki badi buddhimata models hain, uske baare mein yeh hai ki yeh keval keyword to keyword ya word to word ya shabd to shabd matching nahi karta hai. Yeh ek context ko dhyan mein rakhte hue, kis tarike se bola gaya? Kya bola gaya? Pehle kya bola gaya? Un saari cheezon ka dhyan dete hue ek accha uttar aapko deta hai. To agar hum iske brief itihaas ke baare mein jaanna chahein to yeh 1980 ke aaspaas keh sakte hain, emerge hua aur yeh prabhavit hua disciplines like computer science, psychology and cognitive science. To shuruaat mein iska jo focus tha woh keval improving workplace computing aur it covers all the digital interaction, jo bhi aapke digital interaction upkaran, computer, iske madhyam se, aur wahi tak tha. Lekin ab yeh jaise maine bataya, ab iska jo scope hai woh kaafi bada ho gaya hai. To key contributors isme dher saare hain. Inmein sabka naam lena to possible nahi hai. But kuch logon ka agar hum naam lein jaise Don Norman, Professor Allen Dex, Professor Lee, Stuart Card, Thomas Moran and Allen Newell, dher saare aise bahut list hain jin logon ne is area ko aage badhaya hai. Aur iska sense aap keh sakte hain yeh upyogita ko badhata hai, galtiyon ko kam karta hai aur jo aapke upyogakarta hain unke anubhav ko aur santusht purvak banata hai alag-alag industry, alag-alag problem ke aaspaas. To chaliye ek case study ko hum quickly discuss karte hain jismein aap dekh sakte hain credit card payment. Credit card payment ke liye humne jaise pehle discuss kiya tha, alag-alag applications hain. For example yahan Paytm hai, CD hai, PhonePe hai, and so on. To, yahan pe hum do cheezon ko discuss karte hain Paytm ke case mein aur credit ke case mein. Ek kaise aap isko bahut effective, efficient aur enjoyable bana sakte hain. Jaise agar yahan pe aapko credit card payment karna hoga, to bada mushkil hota hai dhoondhna kahaan pe credit card ka hai. Dher saare buttons hain. To agar aap credit use karte hain, to main again main uska prachar nahi kar raha hoon. But this is what I like. Jaise simple credit card pe jaayenge, yahan pe ek bada sa hota hai. Aap is pe click karenge, to jitne aap credit card hote hain directly wahan pe aap uska bill dikhata hai. Due date dikhata hai. Aap usko select karenge, pay kar denge. Chaliye yahan tak pahunch gaye. Aapne select kar liya. Credit card bill pe karna yahan karna hai. Aapne kiya. Yahan pe agar aap karte hain to probably aap dekhte hain ki aapne pay kiya. Theek hai? Ho gaya. Yahan pe aap isko aur enjoyable kaise bana sakte hain? Yahan pe aap keh sakte hain ki effective aur efficient to shayad dono honge. Lekin aap isko aur enjoyable kaise bana sakte hain? Jisse ki aapko usko pay karne mein maza aaye. Aap apne saare kaam to kar len lekin thoda sa kuch uska faayda bhi utha paaye. Manoranjan le paaye. To is case mein jab bhi aap koi bill pay karte hain jaise is case mein aap dekh sakte hain. To koi bhi payment ke baad yahan pe basically wo aapko ek game khilata hai. Jaise bolta hai ki agar aapka 77 aa gaya ek roll type ka hai. Jab yeh roll karega aapke button dabane ke baad to yeh roll karne pe agar 77 aa jaata hai to aapko yeh award milega. Woh award milega. Woh milta hai nahi milta hai. Baad ki baat woh to company jaanti hai. Mujhe nahi mila kisko kya mila. But us case mein aap dekh sakte hain ki ek aapko ek enjoyable de raha hai ki theek hai ab aapne pay kar diya. Lets play some reward reward. Us case mein aap dekh sakte hain ki aap isko yahan pe example ke taur pe aap dekh sakte hain ki aapke paas paanch spin aap kar sakte hain. Paanch baar is roll ko ghuma sakte hain.

Aur agar triple 7 aa jaata hai to aapko bumper price milega. Agar kam aata hai to kuch aur milega. Jaise is case mein jaise is case mein aap dekh sakte hain ki aapko double 7 aane pe ₹1 ka cashback mila kuch aur aata hai to probably aapko points mila vagairah-vagairah is tarike se kar sakte hain. To aur bhi applications honge shayad woh isse better honge. Aap unko baare mein agar jaante hain to uske baare mein aap mulyankan kar sakte hain. Usko dekh sakte hain. Agar aap in organizations sansthaon mein kaam karte hain to isko aur accha bana sakte hain. To iske jo agar hum ki jo mukhya ghatakon ki baat karein to jaise ki humne bataya human computer interaction mein aapka jo manushya hai jo ki upyog karta hai wo to key hai. Usko to center mein aapko rakhna padega. This is central to the SCI and humein involve understanding user behaviour kyunki jab tak hum uske behaviour ke baare mein nahi jaanenge uski expectations uski aashao ke baare mein nahi jaanenge uski limitations uski jo strength hai uski kamiyaan hain uski jo bhi uske baare mein agar hum nahi jaanenge to hum uske liye bana hi nahi sakte accha to isliye user to central hai usko baare mein aapko sochna hi padega technology technology ko aapko dekhna padega wo alag-alag tarike ke technology use kar sakte hain hardware hoga software hoga variable hoga technical infrastructure hoga jo ki in jo interaction paraspar kriya hai usko facilitate usko praapt karne mein complete karne mein aapki madad karega aur finally is user upyogakarta aur technology ke beech mein paraspar kriya kaise hogi wo hoga is interaction ke madhyam se jahan pe how communication occurs between the user and the technology from clicking a button and to using voice command to yahan pe interface ke madhyam se in dono ko joda jaata hai aur is interaction ko perform kiya jaata hai. So Jacob Nielsen ne bola tha know your user. Agar aap apne user ko jaan gaye to aadha kaam to usi samay ho gaya. And that is the halfway to success. Aur agar aapne apne user ko nahi jaana. I bet aap ek accha session bana hi nahi sakte. Aap apne jo upyogakarta hain unko santusht kar hi nahi sakte. Aur agar woh santusht nahi honge to frustrated honge. Woh aapke system ko use nahi karenge. Aapka uske alag-alag keh sakte hain ki aapko nuksan honge. To sabse pehle baat karte hain usability ki upyogita ki kyunki jab bhi aap koi system koi product banate hain kitna upyogi hai wo kitna usable hai wo to keh sakte hain focus on aur yeh is pe focus karta hai how effectively kitne acche tarike se kushalta purvak a user aur upyogakarta jo hai apne in goal ko praapt kar paata hai. Efficiency kitna zyada kushal hai woh kitna kushalta se woh apne kaarya ko kar sakta hai. Jaise agar aapko paise transfer karne hain to kitna aasani se wo simple QR scan kiya aur turant jo jo seller hai ya jo dukaan wala hai usko paise dene hain. Effectiveness kitna prabhavshali hai woh. Kitna accurate hai woh us kaarya ko. For example aapne QR code scan kiya turant wo paise transfer ho gaye. Aisa aur kai aapne dekha hoga ki aap paise transfer kar scan karne ki koshish kar rahe hain lekin scan hi nahi ho raha hai. Alag-alag karanon se to ek tarah se woh prabhavkari nahi hai. Woh sahi nahi ho pa raha hai. Learnability kitna aasaan hai usko yaad rakhna ki kal ko how is it is to new user to begin with the new system. Agar woh cheezen aapko aasaan hongi to simple aap kal ko agar main vaisa similar koi naya system leta hoon to bahut aasaan tarike se aap usko keh sakte hain ki start kar sakte hain. Memorability how easily users can return to system after break. For example aap koi cheez use kar rahe hain. Kuch karanvash aap usko kuch samay tak ke liye use nahi. Jaise mazaak ke taur pe agar main kahun to har naye saal pe 1 January ko hum log

resolution lete hain. Hum log gym jaayenge aur apne sharir pe dhyan denge. Exercise karenge. But probably do-teen din ke baad hum usko bhool jaate hain. Phir dobara usko start karte hain. Ek mahine baad do mahine baad fir se pran lete hain ki chalo theek hai dhyan denge. To agar is case mein aap keh sakte hain jo bhi aapne gym exercise ke liye aapne application banai hai agar woh aapka jo user hai woh wapas aata hai to kitni aasani se saari cheezen yaad rehti hain ki usko fir se turant kaise use kar sakta hai. Satisfaction santushti to bahut badi zarurat hai. Agar users comfort and positive towards the system tabhi woh santusht hoga. So user experience jo hai yeh overall jo experience emotion and perception jo upyog karta hai when interacting with the product usko kaha jaata hai. To user ka jo anubhav hai user experience ismein hum is saari cheezon ko acche se acche banane ki koshish karte hain. Uska anubhav jo hai uska emotion happily usko use kar raha ho. Khushi-khushi use kar raha ho aur perception user has when uske jo product ke baare mein, service ke baare mein, user ki perception kya hai, soch kya hai? Woh bhi madad karti hai. To yahan pe hum quickly baat karte hain usability, user experience aur customer experience ke baare mein. Iske madhyam se aap dekh sakte hain ki kaise ek dusre se related hai. Hum agar isko dekhein to iske key aspect hai iske beech mein antar dhyan dene ka focus. To usability ka jo main focus hota hai woh use ke upar hota hai. Kitna aasani se aap usko use kar sakte hain. Efficiency kitna kushal hai woh aur usmein galti to nahi hai. Woh apne saare kaarya ko sahi tarike se kar pa raha hai ki nahi kar pa raha hai. User experience thoda sa aap keh sakte hain ki ismein aur emotion impact ki baat karte hain ki kaise woh acche tarike se usko use kar pa raha hai. Usko enjoyable tarike se use kar pa raha hai. Sahaj tarike se use kar pa raha hai. Woh bhi hum ismein baat karte hain. Engagement aur emotional impact ki baat karte hain. Aur customer experience ki jab hum baat karte hain yeh poora overall holistic view ki baat karte hain. Jahan pe woh keval product use karne ki baat hum nahi kar rahe hain. Woh pehle kharidne ke pehle kharidte samay aur even kharidne ke baad kaisa experience hai? Jaise agar hum iPhone ki baat karein to iPhone kharidne ke pehle aapko kaise ek accha sa experience diya jaata hai. Aap showroom mein jaate hain. Aap usko use karte hain, try karte hain. Ek experience diya jaata hai kharidne ke pehle. Kharidte samay aapko probably ek Apple ka chhota sa bag de dete hain jo ki kharidne ke dauran aapko ek accha sa experience dikhata hai. It’s also for show of kuch logon ke liye. Kharidne ke baad kaise woh experience maintain kiya jaata hai. Alag-alag software updates aa rahe hain. Aapke phone mein koi dikkat aa gayi. Kaise aapke customer service agent aapko help kar rahe hain, madad kar raha hai, woh cheezen aap dekh sakte hain. To, usi tarike se scope jo hota hai, iska task specific aur interface related issues hota hai. Aur iska thoda sa broader hota hai. Jaise maine bataya yahan pe aesthetics ki bhi baat karte hain aur content ki baat karte hain. Aur customer experience ke beech mein it encompasses UX user experience pe jo bhi cheez hum kar rahe hain. Plus interaction outside the product. Jaise kaise aap iPhone carry karte hain to ek alag se apna rub dikhate hain ya ek pride feel karte hain. Kaise aap uske baare mein soch rakhte hain. Kaisa log aapke baare mein soch rakhte hain iPhone rakhne par. Again example ke taur pe bol raha hoon. Yahan pe objective aap dekh sakte hain. Alag-alag karenge to jo aapka upyog karta hai vah confuse ho jaayega. Usko nahin samajh mein aayega kya ho raha hai. Aur vo esthetic aesthetically bhi dekhne ke madhyam se bhi utna accha nahin lagta hai. To humein jo diz

element should be predictable and uniform through out the interface jo bhi sampark bindu ho jo bhi aapka UI ho har taraf ek tarah se vo consistent hona chahiye. Ek jaisa hona chahiye. Ekroopit hona chahiye. Visibility yeh bahut important hai jo ki aapko batata hai ki aapko visible hona chahiye. Kya functionality hai, kya nahin hai. Important function should be visible and not hidden in a complex menu. Of course aap menu ke madhyam se alag-alag ye cheezen de sakte hain. Lekin jo bhi frequently use jo ki aap baar-baar use karte hain jo zaroori hai vah button dikhana chahiye. Jaise hum video ki baat kar rahe the to wahan pe play button, pause button, forward button ye saari cheezen bahut zaroori buttons hain. To vo visible hone chahiye, dikhni chahiye aur aap uska use kar sakte hain. Error prevention galti ke chances jitna aap bacha paaye, utna accha hoga. To agar aap ek accha design bana rahe hain to apne aap vo jo upyogakarta ki galtiyan hain, use karne ki galtiyan hai, vah sahi ho jaati hain. Uska chances kam ho jaata hai. And offers easy recovery if mistakes are made. Iska tatparya yeh hai ki theek hai aap apni taraf se poori koshish karenge ki galti na ho lekin galti to ho sakti hai jaise aapke bagal do button aaspaas the aapne galti se ek button dabana tha left wala aapne daba diya right wala kyunki kabhi-kabhi ye button kaafi paaspaas hote hain jaise agar aap dekhoge udaharan ke taur par. Taur pe agar chaliye hum video ka example hi dekhte hain video mein ek play button hota hai pause to jab aap play karoge dabaaoge to pause wala visible hoga pause wala dabaaoge to play wala video visible hoga lekin uske just bagal mein aap dekhoge forward wala button to galti se aap play dabane ki jagah forward daba diye. To galti ho gayi. Ab nahin honi chahiye thi lekin ho gayi. Usko bachaane ke liye aap kya kar sakte the? Shayad thoda sa uske beech ka jo distance tha thoda door kar dete. To usne prevent kar diya. Lekin uske bawajood bhi agar maan lijiye galti se dab gaya usko aap wapas sahi kaise karenge? That is something called recovery. Error recovery. To uske liye again aap dekh lijiye. Usko kya karna hai? Usko pause kijiye, backward kijiye, alag-alag tarike se kijiye. And so on. So details are not the details. Ideally aapko humein batane ki zarurat nahin padni chahiye ki dekhiye yeh play button hai. Ye vo button hai. Yahan se aap probably ye karenge vo karenge. Ideally ye dekh ke hi aapko pata chal jana chahiye. To ye jo design principle jo humne interaction design ke principles abhi discuss ki ye saari cheez yehi ingit karti hain ki aap dekh ke hi ek tarah se detail bahut zyada detail dene ki zarurat na pade. Utne se hi aapka kaam ho jaaye aur aap samajh jaaye. De make the design. To human centeredness in SCI jaise humne bataya ki koi bhi SCI mein solution product aap bana rahe hain to jo upyog karta hai vo center mein hota hai. Jo maanav manushya hota hai vo center mein hota hai. To us case mein aapko usko center mein rakh ke saari cheezen banane ki koshish karni chahiye. To aapko the strength and the tradition of SCI has been its centeredness human centeredness in the end and the usability concern. Kaise upyogita ka jo concern hai kaise hum isko bahut upyogi bahut sahaj bahut simple aur prabhavshaali bana sakte hain. Enjoyable tarike se bana sakte hain. Aur human ki jo jaise ki humne bola ki us center mein rakhte hue uski taakaton ko uski kamzoriyon ko uske limitations ko samajhte hue hum kaise apna solution bana sakte hain. To over the years itne saalon mein SCI jo involve hua hai alag-alag methods guidelines principles aur standard ke madhyam se ki kaise hum isko easy to use aasani se use karne ke liye aur easy to learn aasani se seekhne ke liye hum bana sakte hain. To SCI humein is

aur madad karta hai isko easy to use aur easy to learn banane ke liye. To in sab cheezon ke liye aapko apne user ke baare mein bahut samajhne ki bahut zarurat hai. Jaise ki consider what people are good at bad. Apne upyogakarta ke baare mein jaaniye. Kya vah kaarya acche se kar sakta hai? Kya acche se nahin kar sakta hai? Kya uska strength hai? Kya uska weakness hai? Considering what might help people vi the way they current do up. To humein yeh bhi dekhna chahiye agar hum koi cheez pehle se kisi tarike se karte aa rahe hain to hamari koshish yehi honi chahiye ki usi tarike se usko karne dein na ki usko hum alag tarike se karne ke liye majboor karein. To agar hum usko alag tarike se karne ke liye majboor karenge to wahan pe galti hone ki chances aur bhi zyada badh jaati hain. Thinking through what might provide quality user experience. Humein is baare mein aur sochne vichaarne ki zarurat hai. Kaise hum uske jo user ke upyogakarta ke anubhav ko hai hum usko aur quality aur accha kaise bana sakte hain. Listening to what people want and getting them involved in the design. Yeh bahut hi important baat hai. Humein yeh nahin sochna chahiye ki hum chaliye yeh bana dete hain. Yeh to use karega ye. Yeh nahin hona chahiye. Aapko kuch bhi cheezon banane se pehle jo bhi aapke stakeholder ho sakte hain, prospective stakeholder ho sakte hain, unke saath samvaad sthaapit kijiye. Unke feedback lijiye. Unke baare mein jaaniye. Unki zarooraton ko samajhiye aur uske baad aap kuch cheezen banaiye to uski adoptability badh jaayegi. Usko use karne ka, usko lene ka, usko apne jeevan mein lane ka jo chance hai vo badh jaayega. So user center design to user research aapko karne ki zarurat hai. User ke baare mein jaanne ki zarurat hai. To usko aap alag-alag tarike se kar sakte hain. Sarvekshan kar sakte hain. Jaise conducting survey interview kar sakte hain. Vartalaap kar sakte hain. Observation to user understand their need. Jaise kuch case mein aap keval observe karke bhi dekh sakte hain. Jaise ah jaise maine bataya ki agar aap ah for example online education ke baare mein baat kar sakte hain. Survey ke madhyam surveykshan ke madhyam se interview ke madhyam aap jaan sakte hain kuch jo unko pareshaniyan ho rahi hain. Kabhi-kabhi aisa hota hai ki itna aasan nahin hota hai user ko jo upyogakarta ko batana hai ki usko dikkat kya ho rahi hai. As a expert, as a developer, as a designer. Kabhi-kabhi aap un cheezon ko dekh ke bhi samajh sakte hain ki usko kya dikkatein ho rahi hain. Usko kaun se feature ko dene ki zarurat hai. To us case mein aap jo aapka upyog karta hai usko video dekhne dijiye. Online video dekhne dijiye aur dekhiye kaise vo struggle kar raha hai. Usko kis tarah ki dikkaton ka samna to usko karke bhi aap user ke baare mein jaan sakte hain. Ideation uske baare mein aapko vichaar karne ki zarurat hai. Brainstorming and sketch idea based on the user research. To aap jo user research ke madhyam se aapne jana ki aapke upyogakarta ko kya chahiye uski kya zaruratein hain vo sab cheezen aap dekh sakte hain aur addition ke dauran jo aap usse discuss kar sakte, vartalaap kar sakte, sketch bana sakte aur solution nikalne ki koshish kar sakte hain. To ek baar jab aapke paas prospective direction mil gaya to aap ek tarah se uska namuna bana sakte hain. Yeh namuna ek tarah se aap keh sakte hain ki jo prospective user hain jo aapke upyogakarta ho sakte hain vah usko use kar sakte hain. To jaise yahan pe mockup bana sakte hain, wireframe bana sakte hain to visualize the solution ki is tarike se uska solution dikhega. Jaisa namune ke case mein prototype ke case mein humne pichle vyakhyan mein discuss kiya tha vo low fidelity ho sakta hai, mid fidelity ho sakta hai aur high fidelity ho sakta hai. To, low fidelity ka fayda ki turant ban jaata

hai. Jisse ki turant aapko kuch na kuch feedback mil jaayega. Mid fidelity ya fir un cheezon ko low fidelity mein jo aapko feedback mila usko incorporate karte hue usko address karte hue aap mid fidelity bana sakte hain aur apne user ko fir bol sakte hain accha ab chaliye aap aur naye user ko bhi bol sakte hain ab aap try kijiye jisse ki humein aur bhi cheezen pata chalti hain. Hum aur bhi cheezen sahi kar sakte hain. Finally high fidelity prototype mein jo namuna bana rahe hain vo kaafi had tak similar hoga. Uske baad jo high fidelity prototype mein jo namuna aap bana rahe hain vo kaafi had tak similar hoga. Same hoga dikhne mein aur use karne mein jo actual product aap finally banayenge aur ho sakta hai usmein kuch functionality kaafi had tak kam ho limited ho lekin ek aapko feel mil jaayega ki haan aisa hone wala hai aisa karne wala hai uske baad testing hum karenge testing ke case mein parikshan mein hum kya karenge ki hum uski usability testing karenge ki jo upyogita uski honi chahiye vah kar pa raha hai ki nahin kar pa raha hai jo kaarya isko karna chahiye tha kya vah saare kaarya ko kar pa raha hai ki nahin kar pa raha hai to vah hum usability testing ke andar karte hain aur hum isko real user ke saath agar karein to aur bhi behtar hoga. To us madhyam se humein real testing ho jaayegi. To with real user gather feedback unka feedback lijiye. Uska parikshan kijiye aur uski upyogita dekhiye kitna upyogi hai. Jitna isko hona chahiye tha hai ki nahin hai. Aur uske hisaab se jo bhi aapko feedback mil rahe hain aap punaraavriti karte rahiye. Jaisa ki humne bataya ki aisa to ho nahin sakta ki ek baar mein aapne kuch bana diya perfect session ho gaya. There is nothing like perfect. Right? There is always scope of improvement samay ke saath technology ke saath logon ki zaruratein ke saath vah badalti rehti hain. Aur is punaravriti ke madhyam se aap refine kariye jo aapka design hai, user feedback hai, observation hai aur ek bada achha sa user center design ko follow karte hue ek aisa apna product banaiye, service banaiye jo ki human ko jo ki maanav hai jo upyog karta hai usko center mein rakhte hue madhya mein rakhte hue uske saare karyon ko bade aasani se sugamta se kar sake. To alag-alag tarike ke interaction style ho sakte hain SCI mein. Jaisa ki aap dekh sakte hain ki command line interface hota hai jismein aap agar aap logon ne Linux pehle use kar rakha ho ya command line use kar rakha ho, server use kar rakha ho to usmein aap dekhte hain ki aap command line ke madhyam se alag-alag jo fix command hote hain uske madhyam se aap cheezon karte hain. Jaise agar aap logon ne Linux use kar rakha hoga. To agar kisi folder mein alag-alag file hai usko dekhna hai to aap LS likhte hain LS to us folder mein probably jo bhi files hote hain unke baare mein details de sakta hai. Graphical user interface jo ki keh sakte hain ki graphical user interface one of the major reason hai jiski wajah se Apple ke jo computers the poori duniya mein chha gaye aur Apple ko itni badi company banane mein madad ki. To iske baare mein hum aur aage discuss karenge. To ye basically ek tarah se visual dekhne wala element hota hai. Jahan pe ab aapko technical kyunki command line mein dikkat ye hoti hai aap saare command yaad nahi rakh sakte hain. Visual element ke case mein aapko pata hai ki ye button dabana hai. Is button ko dabana hai. Menu mein ye ye button usko dabana hai. Usse aap apne saare kary kar sakte hain. Voice user command us case mein ab aapko khojne ki zarurat nahi hoti is menu mein. Kahan hai? Simple aapne bol diya aur sahaj hai aur aasaan hai. To voice user interface ke madhyam se. To wo basically kya karega? Jo bhi aapne bola usko wo uski understanding karega. Jaise maine poocha ki aaj ka temperature kya hai? To

wo prashn nikaalega ki main aaj ka temperature aaj itni tareekh hai itna temperature nikalna batana chahta hoon. See Alexa se jaise poochte hain. Usmein agar hum usko aur complex bana dein. Delhi mein batao aaj ka temperature kitna hai? Delhi mein is jagah pe kitna temperature hai? To us tarike se ab wo ab Bharat ki bajay Japan ki bajay wo aapko Delhi ka poora batayega. Gesture basic ab mujhe bolne ki bhi zarurat nahi hai. Keval maine jo bhi alag-alag gesture hai uske madhyam se usko apna input diya aur uske basis pe hum apna kar sakte hain. Jaise ki ek apne phone ko aapko unlock karna hai to simple gesture ke madhyam se aap usko control kar sakte hain. Kar sakte hain. AR VR to ek tarah se aapko immersive interface deta hai. That blends jo real duniya hoti hai. Sach sachai wali duniya hamari jo hai aur virtual duniya jo aabhasi duniya hai 3D 3D duniya jo ek tarah se aap keh sakte hain jo computer ke dwara generate kahi gayi ho to ek tarah se user experience deta hai AR aur VR ke case mein humne pichle class mein AR VR ke baare mein briefly discuss kiya tha. Aapko yaad hoga AR ke case mein real life mein computer generated jo information hoti hai wo hum us pe daalte hain, dikhate hain aur dono ko ek saath dekhne ki koshish karte hain. Jaise humne Go ke baare mein baat ki thi. Humne Snapchat aur Instagram ke alag-alag filters ke baare mein baat ki thi. So on. VR ke case mein jaise humne bataya tha ek 3D ke dwara generate ki gayi ek duniya hoti hai aur hum uske andar participate karte hain. Jaise ab hum jo VR games hote hain ya space ke baare mein aapko jaana hai to again wo alag-alag area ke liye use ho sakta hai. Wo education ke liye use ho sakta hai. Wo game ke liye ho sakta hai. Wo learning ke liye ho sakta hai. To dher saare aise work hain. Aap iske baare mein dekh sakte hain. Aur bhi emerging trends hain jo ki SCI ke saath use ho rahe hain AI and machine learning ka. To us case mein basically interface that learn from user behaviour and personalization AR VR ke baare mein humne quickly baat ki. Wearable pehnne yogya upkaran ke baare mein humne thoda bahut pehle baat ki thi. Jaise us case mein aaj humne bata bataya tha smart watches ke baare mein. Smart watches ho sakte hain, smart rings ho sakte hain. Smart caps ho sakte hain, smart glass ho sakte hain. Jaise abhi recently Facebook ne ek chashma railway ke saath basically launch kiya jo is chashme ke andar aap keh sakte hain ki camera bhi hota hai. Jo camera ke madhyam se jo slide pe likha hua hai wo seedhe wo padh ke bata dega aapko ki haan ismein ye hai. Aap usse seedhe prashn pooch sakte hain. Speaker bhi hota hai, mic bhi hota hai. To ek tarah se usmein dher saari cheezen connected hai jo ki aapko help karti hai. To wearable technique aajkal bahut hi popular ho rahi hai. Alag-alag aap khud ka ek naya wearable aap bana sakte hain. Based on jo aaspaas aap zaruratein dekh rahe hain upyogkarta ki uske hisaab se ye ek tarah se navachar ka ek naya vichar hai. Aap soch sakte hain, kar sakte hain aur koi badi baat nahi hai. Aap kar sakte hain. Natural user interface. So interface on intuitive actions like gesture, voice alag-alag tarike se. So the best interface is no interface. Golden Krishna ne bola tha. To badi achhi baat inha ne bola. Ideally jo interface jaise humne bataya tha ek tarah se sampark bindu hai. Ideally wo barrier ke bina agar hum koi kaam kar paaye to that is the best thing but har jagah wo possible nahi hai. To usko jitna minimal hum bana sake jitna kyunki jitna zyada interface hoga utna zyada friction hoga. Wahan pe utna zyada galti hone ki sambhavana hogi. Wo cheez humein kam karne ki zarurat hai. To the best interface is no interface. Humein interface jo sampark bindu is tarike se bana hai ki woh minimal ho aur

apna kary bina galti se kar paaye. To accessibility jaise humne bataya ki kaise hum apna bada achhe se sahaj bana sakte hain. To visual accessibility ho sakti hai. High contrast scalable text alternative text for image ho sakta hai. Motor accessibility yahan pe jahan pe hum khaas taur pe movement ki baat karte hain. Simplified navigation keyboard shortcut voice commands keh sakte hain. Soch vichar cognitive accessibility ki agar hum baat karein kitna cognitive load kam load ke saath hum kar sakte hain. To use of simple language rather than bahut hi jatil hum language use karein. Consistent navigation agar hum alag-alag navigation alag-alag style alag-alag interface use karenge to bada complex hota hai us cheezon ko use karna. Cognitive load badhta hai. To isiliye humne pehle hi baat ki thi ki isko consistent hone ki zarurat hai. Clear instruction hona chahiye. Usmein koi ambiguity nahi honi chahiye. Ambiguity hogi to wo confuse ho jaaye. Karna kya hai? A karna hai, B karna hai and so on. Auditory accessibility jahan pe is case mein caption for videos transcript for audio sound alternative is tarike se cheezen kar sakte hain. Arduino ka humne bataya tha. Aap iske baare mein dekh sakte hain. Alag-alag nirdesh hone chahiye reference to standard like WCAG Web Content Accessibility Guideline area that is hum isko aage ke saptahon mein aur detail mein discuss karenge. But ek tarah se yeh ek tarah se nirdesh hai government ki taraf se alag-alag countries mein ki agar aap koi website bana rahe hain to usko ye follow hona chahiye. Is guideline mein jo bhi cheezen likhi hai woh follow honi chahiye jisse ki har tarah hum information ko limit na karein. Kisi kuch logon tak hi har kisi ke paas usko use karne ka barabar mauka ho. So accessibility is not a feature it's a social trend jaise ki Antonio Santos ne bola tha. Evaluating usability in SCI jaise ki humne bataya hamara ultimate aim hai ki hum isko upyogi banaye. Jo bhi system banaye usko upyogi banaye. To humein kaise pata chalega ki upyogi hai ki nahi hai? Jo kary isko karna tha wo kar pa raha hai ki nahi kar pa raha uske liye humein uska mulyankan karna padega. To isliye alag-alag tarike ke mulyankan hote hain. User testing hai, heuristic evaluation hai. Jahan pe hum anubhav ke aadhar pe iska mulyankan karte hain. Jahan pe jo expert hote hain apne anubhav ke aadhar pe alag-alag tarike ki keh sakte hain ki uska mulyankan karte hain. User testing case mein observing real user interacting with the product aur alag-alag cheezen ko log kar sakte hain. Dekhte hain kitni galti kar raha hai nahi kar raha hai. Hum survey kar sakte hain. Hum sarvekshan kar sakte hain. Questionar de sakte hain, pooch sakte hain, dekh sakte hain. Kaise jo upyog karta hai usne usko use kiya, complete kiya, cognitive work through kar sakte hain. AB testing kar sakte hain. Jahan pe humne ek hi product ke do version diya A aur B. Aur hum dekhte hain ki user jo upyog karta hai, woh kisko prefer karta hai. Jaise agar aajkal aap log ChatGPT use karte honge to aur even DeepSea aur kai jagah hota hai ki jab aapne usse koi prashn poocha to aapko do response deta hai. Version A, Version B. To wahan pe ek tarah se ChatGPT humse humara feedback leta hai ki humein kis tarah ka response zyada pasand aa raha hai aur is tarah ka jo feedback hota hai wo ChatGPT jaise models ko basically kya karta hai usko madad karta hai apne model ko further update karne ke liye ki jyadatar log ye A wale option ko prefer kar rahe hain compare to B wala to ab hum apne model se A wale tarike ke response ko zyada generate karenge to is tarah se aap dekh sakte hain ki mulyankan bahut hi zaruri cheez aur Peterkar ne sahi bola tha. What Gates major Gates manage kyunki agar aap usko mulyankan hi nahi kar payenge uske baare mein pata

nahi hoga to aapko manage hi nahi kar sakte na. Usko bata hi nahi sakte ki wo kaisa karega. Aap it will become like a surprise. Aap use kar rahe hain achanak se wo crash ho jaayega. Aap use kar rahe hain achanak se ₹100 daal rahe hain ₹200 chala jaayega. Bahut cheezen ho sakti hai. Aap person A ko daal rahe hain paisa person B ko chala jaayega. To ye saari cheezen mulyankan karne ki zarurat hai aur jab bhi aap koi system banate hain to mulyankan uska ek abhin ang hai. Usko aapko bade rigorously bahut zor shor se uska mulyankan karne ki zarurat hai. So alag-alag case studies aap dekh sakte hain. ke successful case studies bhi hain. Fail case studies bhi hain aur uska vishleshan hai jo ki aap dekh sakte hain. So ye main aapke upar chhodta hoon. Aap dekh sakte hain jaise kaise iPhone ka Apple ka iPhone Google search ek bada achha successful case study hai. Google search ke pehle Yahoo search ek tarah se sabse bada search engine hota tha. Lekin Google search ke baad ek tarah se aaj Yahoo ki kya sthiti aap dekh sakte hain. Fail case studies mein aap dekh sakte hain ki Google ne bhi ek Google Glass use kiya tha jo ki fail ho gaya. Uske alag-alag reasons hain. Is case studies ko dekh sakte hain. Similarly Windows ne ek vista use kiya tha jo ki again logon ne usko saare haath nahi liya. Usko utne achhe se use nahi kiya. To kaise aap bana sakte hain? To hum is course mein example ke taur par Poojak Ved ki baat karte hain jo ki mere chhatra Aditya aur Manya ne ek tarah se isko aage badhaya hai aur ismein navachar bhi kiya hai aur aage is research ko aage le ja rahe hain ek aur PhD student Shikh ji ke saath to us case mein aap dekh sakte hain yahan pe purpose yeh hai ki visually impaired jo student hote hain, woh hamesha struggle karte hain. Zyadaatar case mein khaas taur pe jo naye seekhne wale hain. How to learn Braille jo ki ek tarah se unke liye letters hain visually impaired bachchon ke liye two lack of interactive tools and guidance. Hamare paas again utne dher saare teachers nahi hain. Hamare paas utne dher saari technology nahi hai. To traditional methods are outdated and fail to engage them. Enjoyable nahi hai. Jaisa ki humne bataya ki agar hum technology ke madhyam se un cheezon ko replicate karte hain to usko easy to use hona chahiye, sahaj hona chahiye, enjoyable hona chahiye. To wo cheezon ka humein dhyan dena hai. So abhi limited aur insufficient teaching assets lead to decrease instructor motivation. Jab bachcha seekh nahi raha hai to mehnat karne ke bawajood bhi to thoda sa instructor ka motivation bhi down hota hai. To while existing tools make tracking progress difficult how steep and have steep learning to wo cheezon ka humein dhyan dena hai aur dher saari NGO government agency hai jo ki alag-alag regional language mein isko karna chahti hain. To lack of support of user-centric tools adequate support system wo ho nahi pa raha hai. To is project ke madhyam se hum iske baare mein aur detail mein aage ke saptahon mein discuss karenge. Kaise is project ko complete kiya gaya. Kaise saptah war kaise alag-alag iske ghatkon ko complete kiya gaya? Kaise iska ideation kiya gaya. Kaise requirement ko jo aapko upyog karta hai uski zaruratein samjha gaya. Kaise uska vishleshan kiya gaya? Kaise iska namuna banaya gaya. Low fidelity, mid fidelity, high fidelity jo prototypes hai woh banaya gaya. Kaise mulyankan kiya gaya? Kaise ismein alag-alag iteration punaravrutti hui isko ek achha product banane mein. To wo sab cheezon ka hum adhyayan karenge going forward. To jaise is project mein maine bataya ki Braille alphabet hote hain. Alag-alag letters hote hain. Ismein aap ek tarah se keh sakte hain ki do ye hain depends on kaunsa dot on hai uske basis pe us letter ko bolte hain. Jaise yahan pe aap

dekh sakte hain ki each Braille character consist of six dot arrange in two clauses three grids. To yahan pe do columns hain. Pehla aur doosra aur ismein tino mein dono mein teen-teen dots hain. To dot representation jaise jo hai jo bhi dots on hai uske basis pe aap keh sakte hain ki ye kaunsa letter hai. Iska numbering aap keh sakte hain 1 2 3 4 5 6 hai to uske basis pe aap kar sakte hain. Jaise yahan pe case mein agar main bolun ki do aur char on hai to wo letter I hoga. To usko aise karna padega. Isi tarike se numbers aur alphabets ka aap dekh sakte hain. To hum iske project ke madhyam se hum karna chahte hain jo wearable assistant for your viz hai. Ismein hum haptic sensor ko gently nach karke hum ek gloves ke madhyam se isko Braille seekhne ki madad karte hain. Ismein yahan pe audio feedback bhi hota hai jo ki basically website with two models more to assist student and enable instructor to track progress jismein aap apne progress ko dekh sakte hain kaise aap aage badh rahe hain aur jo humne government aur NGOs ke baare mein baat ki thi unko bhi madad kar sakte hain isko scalable banane ke liye. To iske saath ab finally hum is saptah one ki summary par aate hain. Jahan par humne ek charcha ki kaise good design is intuitive sahaj hai. Upbhokta jo upyog karta hai usse friendly hona chahiye. Aasan hona chahiye. And jo problem hai usko kushalta purvak solve karna chahiye. Jabki bad design jo hota hai wo thoda confusing hota hai. Inefficient hota hai aur hamesha fail ho jaata hai. Jo aapke upyogakarta ki zaruratein hain aur unki jo aashaen hain. The goal of interactive system is to create seamless and efficient user experience den aligned with the users need and objective. User ki jo upyogakarta ki jo zaruratein hain aur jo uddeshya hain unke taraf hi humein apna interactive system ko banane ki zarurat hai aur humne digital transformation ki baat ki. Kaise hum physical world se digital transformation ki taraf ja rahe hain. To yeh basically iska jo integration hai with digital technology alag-alag area ke liye yeh basically alag-alag organization aur alag-alag jo uske customers hain unko madad kar raha hai. User center design humne bataya ki humein user ko center mein rakhne ki zarurat hai. Madhya mein rakhne ki zarurat hai. Kyunki yeh jo upyog karta hai uske liye hi to hum sab bana rahe hain. Jab tak hum uski zaruratein ko prioritize nahi karenge, uske preferences ko prioritize nahi karenge, uske behaviour ke hisaab se intuitive aur effective product session nahi banayenge. Wo usko use nahi karega. Uska anubhav achha nahi rahega. Wo cheezon ka dhyan dena hai humein aur aap koi bhi real world jo vyavaharik jeevan hai usmein problem aap apne aaspaas utha sakte hain. Aur dekhein kitna relevant hai, kitna impactful hai aur address tangible needs, creating value for society. Iske saath finally is course ke is saptah ke ant mein ek sample project bhi hai jo ki aap dekh sakte hain aur tutorials bhi hai jismein hum good design aur bad design ke baare mein baat karenge. Rithik ne usko dikhaya hai. Hum aapko ek assignment bhi denge jisse ki aap usko karke dekh sakte hain ki aapne jo is saptah mein seekha hai kya usko aap apply kar pa rahe hain. Prashnon ke uttar de pa rahe hain. To woh cheez aap karne ki zarurat hai. Again hum is saptah mein slides ke madhyam se hum saari cheezon ko cover nahi kar sakte. To humara aapse darkhwast hai ki aap yeh extra cheezen dekhiye apne se aur bhi cheezon ko jaanne ke baare mein. Good design bad design kya hai? SI guideline kya hai? Gender equity aur inclusivity ke liye invisible women ek bada achha article hai. Aap isko padhna chahiye. SCI by SI interactive design foundation bada achha resource hai.

Aap isko dekh sakte hain. Isse seekh sakte hain. Isi ke saath saptah one mein hum aapse alvida lete hain aur agle saptah hum fir prastut honge ek naye topic ke saath. Dhanyavaad.