

Human Computer Interaction (Hindi mein)

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Evaluation Techniques

Lec31

[Sangeet] Namaskar main Ritwik Bamba aapke is course Human Computer Interaction ka sahayak shikshak hoon. Aaiye aaj ka tutorial shuru karte hain. Aaj ke tutorial ka hamara vishay hai Evaluation yaani ki aaklan. Pehle hum yeh dekh lete hain ki humne isse pehle kya-kya kiya hai. Sabse pehle humne Good Design versus Bad Design kiya. Yaani ki achha design versus kharab design. Phir humne kuch pehlu dekhe ki kya-kya tathyon ki vajah se ek design achha kehlaaya jaata hai. Iske baad humne inclusivity aur accessibility ke baare mein padha aur woh kaise ek doosre se alag hote hain. Inclusivity zyada se zyada logon tak ek design ki pahunch ko badhana chahta hai. Jabki accessibility divyang janon evam aise users ke liye zyada zaroori hai jinki kuch special needs hain. Uske baad humne paanch mukhya design principles padhe jo ki hain Visibility, Feedback, Consistency, Constraints aur Affordance. Humne yeh dekha ki hum kaise accessibility, inclusivity aur usability ko saath mein laakar ek inclusive design bana sakte hain. Iske baad humne interaction design process ke chaar mukhya gatividhiyon par dhyan diya jo ki hain sabse pehle hamare jo upyogkarta hain, users hain unki zarooraton ko samajhna. Uske hisaab se design ke hal banana jiske baad hum prototyping karenge unhin ke halon ki unke halon ko hum asal zindagi mein unke roop banayenge aur aakhirkar evaluation yaani ki aaklan hum kis tarah se un banaye gaye jo prototype hain hum unka aaklan kar sakte hain. Yeh pata laga sakte hain ki woh kis dhang se users ki jo dikkatein hain unko hal kar pa rahe hain ki nahi. Iske baad humne interaction design ka double diamond dekha jo ki hum sabse pehle users ki dikkato ke baare mein samajhte hain. Phir un dikkato mein se sabse jo mukhya dikkat hoti hai us par dhyan dete hain. Iske baad hum use hal karne ke liye kaafi saare halon par dhyan dete hain aur unmein se jo sabse sahi hal hota hai humein lagta hai hum usko chunte hain. Iske baad humne user persona dekhe aur kaise banate hain user persona, empathy mapping yaani ki samanubhuti mapping. Mental model aur conceptual model pe bhi dhyan diya humne. Woh kaise ek doosre se alag hote hain. Mental model ek user ke dimaag ki rachna hoti hai. Jabki conceptual model ek designer ke dimaag ki. Jab yeh dono aapas mein mel khaate hain tab yeh ek good design ban jaata hai. Iske baad humne information architecture par bhi dhyan diya. Aakhirkar humne cognition cognitive load pe dhyan diya yaani ki maansik bhaar. Aisi kya-kya cheezein hain jinse maansik bhaar badhta hai? Iske baad humne prototyping kari. Lo-fi yaani ki prarambhik star ki, mid-fi madhyam star ki, hi-fi yaani ki uchh star ki. Aur in teeno mein aapas mein kya farak hote hain. Chaliye aaj ke vishay par thodi si charcha karte hain jo ki hai evaluation yaani ki aaklan.

Kis cheez ka aaklan humein karna hai? Pehle toh humein yeh samajhna bahut zaroori hai. Jab humne koi design banaya creation hui ek uske baad hum uski testing karenge. Jab woh testing ho jayegi usse data aayega. Hum usko evaluate karenge aur woh evaluate karenge. Usse jo humein seekh milegi hum usse apne drawing table par wapas aayenge aur jo humne design banaya hai usko aur behtar karenge. Humein apne system ki upyogita ko maapna hai toh hum evaluation kar sakte hain. Evaluation hamesha users ke saath hoti hai. Users evaluation karte hain. Users humein aaklan karke batate hain ki unhein is app mein kya achha laga, kya bura laga aur usmein kya badlaav kiye jaane chahiye. Yeh dono design aur use kis tarah se implement kiya gaya hai. In dono tarikon ko hum pehluon ko samajhkar evaluation karte hain. Aur design life cycle ke har star par humein evaluation ki zaroorat padti hai. Hum jaise-jaise kuch design kar rahe hain. Humein uske baare mein sochna chahiye. Uska aaklan karna chahiye ki kya woh asal zindagi mein jo hamare upyogkarta hain unki dikkato ka hal kar payega ya nahi. Hum kya poorn karna chahte hain aaklan ke saath? Sabse pehle hum yeh jaanchana chahte hain ki hamara jo system hai woh kitna functional hai. Kis tarike se woh pradarshan kar raha hai. Hamara jo interface hai uska upyogkarta pe kya farak pad raha hai? Aur aakhirkar kuch dikkatein hain jo humein unka pata lagana hai. Hum yeh sab poora karna chahte hain apne aaklan ke taur. Sabse zaroori hai inmein se dikkatein dhoondna aur kis tarah se un dikkato se hum seekh le sakte hain aur aur apne design ko kis tarah se behtar kar sakte hain. Hum implementation ko bhi evaluate karte hain. Yaani ki humne kis tarah se us design ko banaya hai. Kis tarah se woh kaam kar raha hai. Iske liye hum alag-alag tarikon se isko udaharan ke taur par samajh sakte hain. Jaise ki hum ek simulation kar sakte hain ki kya woh sahi tarike se pradarshan kar raha hai. Hum prototype ke madhyam se kar sakte hain aur aakhirkar hum use poora bana ke us design ko us yantra ko poora banakar uska aaklan kar sakte hain. Ab humein aaklan kiska karna hai? Humein woh samajhna hai. Jaisa ki humne pehle thoda sa padha tha ki data jo hai hamara mukhya do tarah ka hota hai. Qualitative yaani ki gunatmak. Ismein hum data ke alag-alag gunon ko dekhte hain aur yeh zyada tar numeric nahi hota. Yeh saakshatkaron ke through pata lagaya jaata hai. Aur focus group bhi isi mein aate hain ya phir agar koi open ended hamare paas prashnavali ho toh us madhyam se hum gunatmak data ikattha kar sakte hain. Isse hum users ke anubhavon ko ek gehan roop se jaanch sakte hain aur unke vicharon ko achhe se samajh sakte hain. Iske baad hum aate hain quantitative data par yaani ki maatratmak data jo ki numerical data hota hai jisko hum maap sakte hain aur uska hum vishleshan kar sakte hain statistically. Hum isko close ended surveys evam isi tarike ke alag-alag gatividhiyon ke tarah hum inko ikattha kar sakte hain. Isse hum pradarshan maap sakte hain aur gunavatta ko hum maap sakte hain. Kitna sahi ho raha hai. Accuracy maap sakte hain hum. Error rate kitni galtiyon ho rahi hain? Yeh sab maap sakte hain hum apne maatratmak data ke saath. Ab iske liye humein hamare jo participant hain, jo hamare pratibhagi hain, humein unko ek achhe dhang se chunna zaroori hai. Sabse pehle humein yeh dhyan dena hai ki jo hamare pratibhagi hain, woh hamare asal users ke saath mel khaate ho. Jo ek hamara umra ka star hai hamare asal users ka jinke liye hum ek app bana rahe hain. Hamare evaluation ke aaklan ke jo pratibhagi hain woh usi aaspaas umra ke hone chahiye. Agar hum mahilaon ke liye koi yantra bana rahe hain toh hamare pratibhagi keval mahilayein hi honi chahiye. Agar humein usability

testing karni hai toh humein kam se kam 5 se 10 pratibhagi chahiye. Agar hum kuch statistical dhoondna chah rahe hain toh uske liye humein kam se kam 20 pratibhagiyon ki zaroorat hai. Agar hum homogenous group le rahe hain aapas mein samanantar group le rahe hain toh usse jo chhote-chhote differences hain jo chhote farak hain humein woh pata laga sakte hain. Agar hum alag-alag samooch ke saath kar rahe hain apna vishleshan toh hum ek bade roop par ek broader insight hum ikatthi kar sakte hain apne users ke saath jisse jo hamare results hain usmein ek farak toh aayega par humein ek bada pehlu dekhne ko milega ki hum kis tarike se apne design ko aur behtar kar sakte hain. Aakhirkaar agar hum apne jo pratibhagi hain unko kuch incentive dein, kisi tarike ka kuch gift dein is roop mein jo hamare pratibhagi hain woh motivate honge hamara task achhe se karne mein. Uske baad jo hamare target user hain uske representative hona chahiye. Jis hum varg ke logon ke liye yeh bana rahe hain. Humein humein pratibhagi waise hi chahiye jaise maaniye hum koi yantra hum chikitsakon ke liye bana rahe hain. Toh jo hamare pratibhagi hain woh bhi usi ke aaspaas ke hi hone chahiye. Chahe woh chikitsak ho ya phir aayurvigyan ki padhai kar rahe vidyarthi ho ya phir usi varg ke vaigyanik ho toh usi ke aaspaas ke hamare jo pratibhagi hain woh hone chahiye. Agar koi hamare engineers ke liye hai toh unke liye hum alag jo system bana rahe hain uske liye hamare pratibhagi engineer ya phir engineering ki padhai kar rahe chhatra hone chahiye. Hum unke liye alag-alag incentive de sakte hain. Jaise ki ek mug kuch khane peene ka saamaan ya is tarah ka kuch jisse woh badh-chadhkar bhaag lein. Uske baad hum dekhte hain hamari experimental evaluation kya hoti hai. Ismein hum jo aaklan karte hain woh ek controlled aaklan hota hai. Kuch-kuch cheezon ka hamare jo upyogkarta hain unke vyavahar ko hum chun chun ke dekhte hain. Chhoti-chhoti cheezein gehan pehluon par hum unki jaanch karte hain. Hum pehle ek hypothesis soch ke jaate hain jisko hum test karte hain ki woh sahi hai ya galat hai. Aisi bahut saari experimental conditions ho sakti hain jo badal sakti hain jab hum apna jo control variable hai usko badlein toh. Toh isliye humein un sabko dhyan mein rakhna bahut zaroori hai. Jaise-jaise hamare system mein jo badlaav aa rahe hain, hum yeh dekh sakte hain ki usse hamare user pe kya farak pad raha hai? Uska experience kaisa ho raha hai. Kya koi ek extra feature daalne se user experience behtar ho raha hai ya kharab ho raha hai? Yeh sab kuch aise pehlu hain jin par dhyan dena behad zaroori ho jaata hai. Ab usability testing karne ki humein zaroorat hi kya hai? Sabse pehle hum khud yeh dekhkar nahi bata sakte ki kya jo hamara interface hai kya woh sahi hai? Humein yeh unse hi poochna chahiye jo use aakhirkaar istemal karne waale hain. Jisne aapke ghar ka fridge banaya hai. Kya woh yeh khud bata sakta hai ki yeh aapki saari zarooraton ko poora karega? Shayad nahi. Usne bhi aapki tarah kuch logon se baat kari hogi. Unse samajhne ki koshish kari hogi ki unhein kis tarike ka fridge chahiye jisse woh ek achha fridge bana paya. Hum expert se review le sakte hain ki hamara jo yantra hai woh kis tarah pradarshan karega. Aakhirkaar yeh thoda sa mushkil toh dekhiye rehta hi hai ki asal users jo hain hamare asal upyogkarta hain woh kis tarike se hamare jo yantra hain design hai uske saath kaam kar rahe hain. Humein ek usability testing proposal banane ki zaroorat hai jisse hum apne upyogkartaon ko bata paaye ki hamari testing mein kya-kya hone waala hai. Sabse pehle objective hum isse kya poorn karna chahte hain? Hum jo system test kar rahe hain uske baare mein ek detailed cheez humein ise sankshipt nahi rakhna hai. Humein tasalli se use

samjhana hai hamare upyogkartaon ko, pratibhagiyon ko. Kaise hum yeh test karenge? Kaun-kaun hain pratibhagi jin pe hum yeh test karenge. Kis tarike se test karenge? Kya-kya kaam karwaye jayenge aur kin-kin pehluon par hamare jo users hain unki jaanch ki jayegi. Yeh sab batana behad zaroori hai. Yeh sab approve karwane ke baad hum inko use kar sakte hain. Sunne mein yeh ek bahut hi boring sa aur mushkil kaam lag raha hai. But meri baat maaniye yeh aapki testing ke liye behad zaroori hai aur aapke liye aapki testing ke liye ek testing ka hi kaam karega. Yeh samajhna bahut zaroori hai ki humein kis tarike ke task karwane hain users se. Jo hamare lo-fi design hai, jo hamara prarambhik design hai, humein usse task karwa sakte hain. Agar task zyada lamba hai toh task chhota kiya ja sakta hai taaki zyada se zyada pratibhagi use poori karein. Hai jo asli mein kaam nahi aayenge aur humein task ko aisa nahi banana chahiye jisse hum jo hamara design hai woh jo sabse achhe tarike se karta hai humein uske aaspaas apne jo task hai nahi banane chahiye. Humein users ko kuch-kuch chhoot de deni chahiye. Unhein kaam kar lene dena chahiye. Apni marzi se aur task poori kar lena chahiye. Jo task kuch zyada hi tukdon mein bate hue hain humein unko nahi dena. Humein poori task agar dena hai toh woh ek akela user poori kar paaye. Is tarike ka task dena chahiye. Humein apne jo experiment hai uski jo details hain woh apne upyogkartaon ko theek se batani hai. Kis order mein task poore honge. Kaise jo system hai usmein yeh jo hamara vishleshan hai woh istemal kiya jayega. Agar koi task poori nahi kar paaye toh kya hoga aur kis tarike se hum jo dikkatein hain woh theek kar sakte hain. Hum pehle apne hi jo sehkarmi hain unse yeh karwa sakte hain taaki jo hamare asal users hain unke saath humein dikkat kam aaye aur kuch aisi agar prarambhik dikkatein hain hum unko pehle hi hal kar lein. Kis tarike se do alag-alag tarah ke jo hamare yeh hain between group aur within group yeh kaise alag hote hain? Between group mein do group hote hain aur unmein aapas mein farak dekha jaata hai. Jabki within group mein ek hi group mein alag-alag logon ko aapas mein dekha jaata hai ki woh kis tarike se alag-alag pradarshan kar rahe hain. Kuch humein naitik cheezon par bhi ek naitik pehluon par bhi dhyan dena chahiye. Jaise humein ek consent lena zaroori hai. Hamare jo upyogkarta hain, jo pratibhagi hain, unse humein un par zyada zor nahi daalna chahiye ki woh ismein pratibhagi bane. Unhein yeh batana behad zaroori hai ki woh kabhi bhi ruk sakte hain. Aur yeh is baat par zor dena behad zaroori hai ki hum unhein batayein, unhein samjhayein ki hum apna jo system hai, apna jo design hai hum uska aaklan kar rahe hain na ki unki kshamataon ka. Yeh behad zaroori pehlu hai. Aakhirkar humein jitna se zyada ho paaye hamara jo data hai woh anonymous kiya jaaye. Kisi bhi user ka jo data hai woh bahar na jaaye. Data ko surakshit roop se rakha jaaye aur unki jaanch ko unki jo jaa pehchan hai unhein chhupaya jaaye. Yeh sab dekhne ke baad hum aaklan par aate hain ki hum kis tarike se maap sakte hain. Hamare users hain unki ichhaon ko. Kitna woh users jo hai hamare system ko pasand ya na pasand karte hain. Aur agar humein bahut saari low rating mil rahi hain toh iska matlab bahut saari dikkatein hain hamare design mein jinhein humein hal karne ki behad zor se zaroorat hai. Agar hum unse kuch open ended sawaal poochein jaise ki unhein kya na pasand aaya, kya pasand aaya toh hum usse aur gehan roop se yeh pata laga sakte hain ki hamare design mein kya behtar karne ki zaroorat hai. Hum ek hi sawaal baar-baar pooch sakte hain. Isse jo hai hamare upyogkarta hain, pratibhagi hain, woh assured rehte hain. Aur agar woh sawaal badal rahe hain,

ek hi sawaal ka jawaab alag de rahe hain, toh aap yeh pata laga sakte hain ki kuch gadbad hai. Aakhirkar hum in jo test se jo aaklan se jo hamare results aayenge, hum unko kaise interpret kar sakte hain? Hain. Hum unko kaise samajh sakte hain? Hum unmein pattern pata laga sakte hain ki agar ek hi umra ke logon ka ek hi dikkat hai toh hum usse yeh pata laga sakte hain udaharan ke taur par ki un ek varg ke jo upyogkarta hain unki saath mein kya dikkat ho sakti hai. Hum alag-alag tarike ka data ikattha karke aapas mein unhein istemal karke saath mein istemal karke hamari jo findings hain hum unhein prastut kar sakte hain. Hamara jo hypothesis tha hum data ke saath use sahi keh sakte hain ya galat keh sakte hain. Aur aakhirkar hum isse ek actionable insights le sakte hain ki hum isse kya aisa kaam hai? Hum kis tarike se behtar kar sakte hain. Kis tarike se hum unhein aur badal sakte hain ek behtar user experience dene ke liye aur kis tarah se jo results hain unka istemal kiya ja sakta hai. Kaise unhein sankshipt mein prastut kiya ja sakta hai. Data humein batata kya-kya hai ki kya jo hamara UI hai woh usi tarah pradarshan kar raha hai jaisa humne socha tha. Aur yeh sab karne ke baad hum jo task hai unhein badlein aur hamara jo design hai use aur behtar kar paayein. Jo dikkatein hain hum unhein door karein aur jo hal karein woh aasan se aasan ho. Hal karne ke baad hum unhein phir se aaklan karwayenge aur is baar agar woh nikal jaate hain aaklan se ek achhi rating ke saath toh iska matlab hum successful rahe. Varna humein wapas se us design ko aur behtar karne ki zaroorat hai. Isi tarah hum numbers ko bhi analyze kar sakte hain. Jaise ki jo hamara task time hai hum unhein aadhe ghante se kam rakhna hai. Average 30 hai. Median 17 1/2 hai. Is tarah ki humein kuch-kuch cheezein hain jo humein dhyan mein rakhni chahiye. Hamara jo test jo hamare istemal karenge jo users agar uska set bahut kam hai jo hamare pratibhagi hain woh bahut kam hai toh isse hamare jo test result hai woh sahi nahi aa sakte. Agar hum kuch statistical tarike use karenge toh humein at least kam se kam 20 se 25 pratibhagi hone chahiye. Aur aakhirkar hum un results ko kis tarah se prastut kar sakte hain. Hum yeh bata sakte hain ki kya hua, kaise hua. Hum tasveeron aur graph ki madad se yeh bata sakte hain aur video clips bhi kaafi aasan ho sakte hain samjhane mein logon ko. Yeh hamare stakeholders ko kya dikkatein hain? Unhein humne kis tarah se hal kiya. Aaiye aapke liye ek chhoti si activity di gayi hai is tutorial mein. Humein yeh batana hai yeh jo diye gaye hamare task hain yeh qualitative hai ya quantitative hai yaani ki gunatmak hain ya phir maatraatmak. Thoda sa samay lijiye aur ise poora kijiye. Aaiye dekhte hain. Sabse pehle humne dekha ki kitne kadam uthane pade ek upyogkarta ko yeh order poora karne mein. Yeh hoga hamara maatraatmak. Uske baad user ne kya bataya ki kitna mushkil hai koi ek jagah ka khana dhoondna. Yeh batana apne aap mein ek gunatmak data hua. Kitne pratishat log sahi se khana order kar paaye bina kisi madad ke? Yeh hamara maatraatmak data mein aayega. Agar koi pratibhagi keh raha hai ki jo delivery tracking hai woh sahi se kaam nahi kar rahi hai toh yeh ek gunatmak data mein aayega aur aakhirkar jo ek average rating hai hamare app ki ek se paanch par woh ek maatraatmak data ke andar aayegi. Yeh isi tarah se kuch aur udaharan aapke liye poore karne ke liye diye gaye hain. Kuch samay lijiye aur inhein poora kijiye. Aaiye dekhte hain. Sabse pehle agar koi pratibhagi keh raha hai ki uska user experience mushkil raha. Toh woh ek maatraatmak data mein aayega. Agar humein samay bataya ja raha hai ki pratibhagiyon ne kitna samay bitaya pickup par toh woh aayega gunatmak, nahi maatraatmak. Agar humein yeh feedback

mila hai ki koi app mein kuch is tarike ka ek vikalp daalna chahiye toh woh ek gunatmak data ke roop mein aayega. Agar hum yeh bata rahe hain ki kisi ek pratibhagi ne peeche jaane ka button kitni baar istemal kiya woh aayega maatratak yaani ki quantitative aur aakhirakarr kitne pratishat logon ne order nahi kiya aakhirakarr unhone khana dekha par khana order nahi kiya yeh aayega maatratak mein. Aaklan par aur padh padhne ke liye aap in kitabon evam websites ko bhi dekh sakte hain. Aaklan ke liye itna hi. Dhanyavaad. [Sangeet]