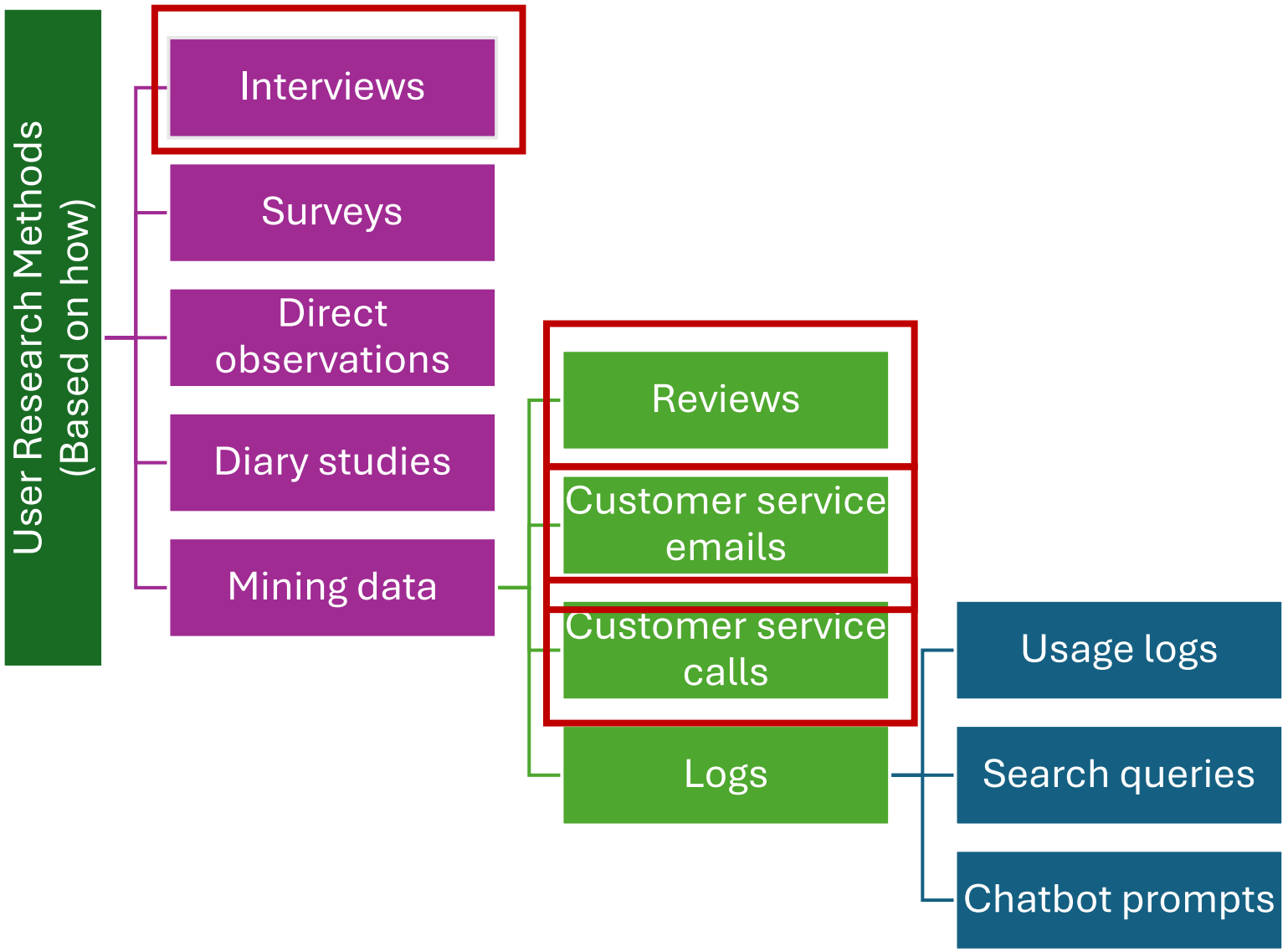
Lecture: 13
Need finding methods (contd.)

Surveys


User Research Methods (Based on how)
Interviews
Surveys
Direct observations
Diary studies
Mining data
Reviews
Customer service emails
Customer service calls
Logs
Usage logs
Search queries
Chatbot prompts

Recap: Interviews

- Researcher asks users questions directly, and the participant responds back in real time.
  - Rich data, but takes time.
  - Allows scope for clarifications and follow up questions.

- Sampling methods: Random, Stratified, Snowball, Purposive
- Sample size: Until theoretical saturation (usually at 10-15)
- Several guidelines on structure and conduct of interviews
- Other flavors: show and tell, critical inquiry, focus groups

Strengths and weaknesses

	Interview		
Time per participant	High		
No. of participants at once	One		
Level of details	Rich details		
Time covered	Present + past		
Scope for follow-up questions	Yes		
Truthfulness / reliability	Recall errors / bias		

Surveys

- A direct method for empirical data collection
- Participants provide responses to a list of pre-decided questions
- Typically, takes <10min, compared to interviews that typically last 60-90 minutes.
- Less detailed, but can be sent a lot of people
- Great for quantitative results (e.g., X% of population)
- Great for generalizability (get results from way more people than in interviews)

Conducting surveys

- Start with a research question (just like with interviews)
- Design survey questions (Ensure they answer the research question)
  - Usually closed + some open-ended questions.
  - Not too long (else, no one would fill it in), 5 min ideal, 10-15 min OK.
  - Think about optional and mandatory questions
- Identify how the survey will be conducted
  - Digital / Paper, Telephonic/In person /Simply send and expect to fill in.
- Identify sampling strategy and suitable sample size
- Identify recruitment method

IITK Freshman app Survey

- Goal: Find most common problems people encounter
- Population → All students
- Sample size → A few hundreds, usually a % of population size.
- Sampling → Random, purposive, stratified, convenience, snowball
- Recruitment → Emails, Flyers, social media, voluntary or not, etc.
- Study design → What questions to ask / topics to discuss / etc.
  - Could be based on interviews already done?
  - Could be based on experiences of researchers + add an “Other” field.

Survey questions: kinds

- Closed-ended questions
  - Single choice
  - Multiple choice (useful to say “which top 3” instead of “which all”)
  - Rank / order choices
  - Sliders for range of values
    - Likert turn range of values into single choice questions
    - E.g., Never Occasionally Sometimes Often Always
    - E.g., Strongly Disagree Disagree Neutral Agree Strongly Agree
- Open ended questions (tell in 1-2 sentences, can be then put into categories / themes)

Asking closed-ended questions

- What to put in options?
  - Reuse questions from other surveys, with modifications as needed.
  - Seed with results from other methods (e.g., from interviews / prior research)
  - Always add an Other / Maybe / Don’t know (Plan for surprises!).
  - When using Likert scales, use standard language
  - Rethink whether you need 5 or 7 (too many options can be confusing)
    - Consider defining / clarifying(e.g., Always = 5+ times a day, Often=1-2 times a day, Frequently = a few times a week, etc.)
  - Rethink whether you need odd / even (central tendency bias)

Characteristics of survey questions

- Use clear, simple, unambiguous language
  - No scope for clarifications, as with interviews.
  - Where needed, provide descriptions, definitions, examples to clarify
  - Highlight when something is tricky (e.g., if it has NOT, make it bold / caps/underline).
  - PILOTs are your friend! (Also tells how long it takes to fill in, useful in recruitment).
- Ensure you don’t exclude some respondents
  - Multiple languages, Accessibility (Braille, screen-reader, color blindness, etc.)
- Ensure relevance of questions
  - Ask questions only if relevant (e.g., based on prior responses)
  - At least don’t make it mandatory → Else messes with quality of responses
- GUARD against biases

What kinds of biases?

- Response biases (or biases in participant responses)
  - Acquiescence – saying yes, even when they don't totally mean it
  - Central tendency – choose middle most value most of the time
  - Extreme bias – tendency to choose extremes
  - Ordering bias – order of questions / options causes bias (esp. from fatigue, or leading-in)
  - Recall bias – recall most recent, most common, etc.
  - Social desirability bias: don't want to something that might not be socially acceptable
  - Bias due to power: The person administrating the survey can be seen as authority
  - Satisficing: Pick something more or less, though not exactly what you feel.

Guarding against biases

- Randomize options within a question, randomize question orders
- Provided an option for Other/None of the above / All of the above
- Ask questions on both ends of the spectrum, to make either side socially acceptable
- Anonymity
- Avoid leading in:
    - E.g., “Social media is bad for older adults.” – Agree or Not
    - Replace with a pair of questions:
      “How much do you think social media is helpful for older adults” +
      “How much do you think social media is harmful for older adults”
    - You could then use: A great deal, Much, Somewhat, Little, Never for each of those.
- Hard question – middle value or not in likert scales.

Example questions

- Did you ever face challenges navigating around campus?
- How long did it take you to get comfortable navigating around campus?
- 1 semester. 1 year. More than a year. I am still lost.

- Did you need help with academic system at IITK?
- Did you need help with social life at IITK? …
  Which of the following did you most need help with when you joined? Rank in order of importance. (Academic, social, Kanpur life, etc.)

- Do you think an app would have helped you better? Yes/No.
- Do you think an app is a good idea for new freshmen?
  - Yes – saves awkwardness, No—it forces them to ask others and make friends.
- On a scale of 1 to 10, how good of an idea is to have an app for freshmen for these issues?
  - 1 – Bad idea, swimming is good character building. 10 – we need one.

Survey questionnaire

- Keep it short! – Too many questions → fatigue/incomplete responses
- When long is necessary
  - Set expectations, break into sections, show progress, save and continue!
  - Break down / reduce, your scope is probably too broad.
  - Avoid too many consecutive questions of the same kind, to avoid fatigue
  - Most important questions top, so valuable even if incomplete
  - Randomize question order, to ensure you get similar number of questions answered across. (Requires questions not dependent on each other!).
- Motivation → Consider rewards: monetary, raffle, coupons, etc.

Sampling

- You identify the population of interest, and sample from them.
  - Include everyone → Census
  - Probabilistic sampling → Known probability of individual being included in the sample
    - Simple random → Randomly invite members to participate (ensure they satisfy inclusion/exclusion criteria)
    - Systematic → Every kth member
    - Stratified → Break into subpopulations, and randomly sample from them
    - Cluster → Break into subpopulation (where each cluster looks like the population itself!), and then draw from them.
  - Non-probabilistic
    - Convenience
    - Voluntary responses
    - Purposive → Decide who, for good reasons
    - Quota → X% from each subpopulation (usually representative of entire population)
    - Snowballing → not so much in surveys, as with other methods

Sample size

- Until saturation
  - After some responses, the overall data we get saturates & stabilizes
  - Ensure diversity in demographics (sanity check!) & then stop!
- External constraints (time, budget, deadlines etc.)
- Probabilistic: depending on margin of error & confidence level
  - Written as z % ± e (Out of 100 repetitions of survey, error within e, Z% of the time)
  - Sample Size = $\frac{K}{1+KN}$, where K= $z^2 \cdot \frac{P(1-P)}{e^2}$
  - P is a probability of a certain response from population, typically set to P=0.5
- How many to recruit: Sample size / expected response rate * 100

Recruitment channels

- Emails, social media, SMS, posters → self-selection bias
- What about people without tech / not registered?
- Pick people from telephone directory → what about those without phones?

- Consider recruitment / sampling on events, people, organizations as well!

Readings:

- Read the chapter on data gathering methods
- Long, but fun reading.
  - A lot the chapter covers that I don't cover
  - But needed for your exams, final project, and for any HCI student.

- A practical read on survey design:
  - Survey design guidelines