

CS798H: Human-Computer Interaction (HCI)

Dr. Sruti S Ragavan

Course logistics

- Tuesdays & Fridays @ 3:30-4:45pm
- Venue: RM101



Agenda

- What is HCI?
- Why we should care about HCI?
- Course policies
- Questions



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About me

- 2022 – Now (IIT Kanpur)
 - Department of CSE
 - Adjunct in Department of CGS
- 2019-2022 (Microsoft Research, Cambridge UK)
- 2014-2019: Meandered to find home in HCI
- Long time ago (2011-2014): Software consultant
- Office: KD220 / CDIS (ESB-2)
- Meetings: Only by appointment

What is Human Computer Interaction?



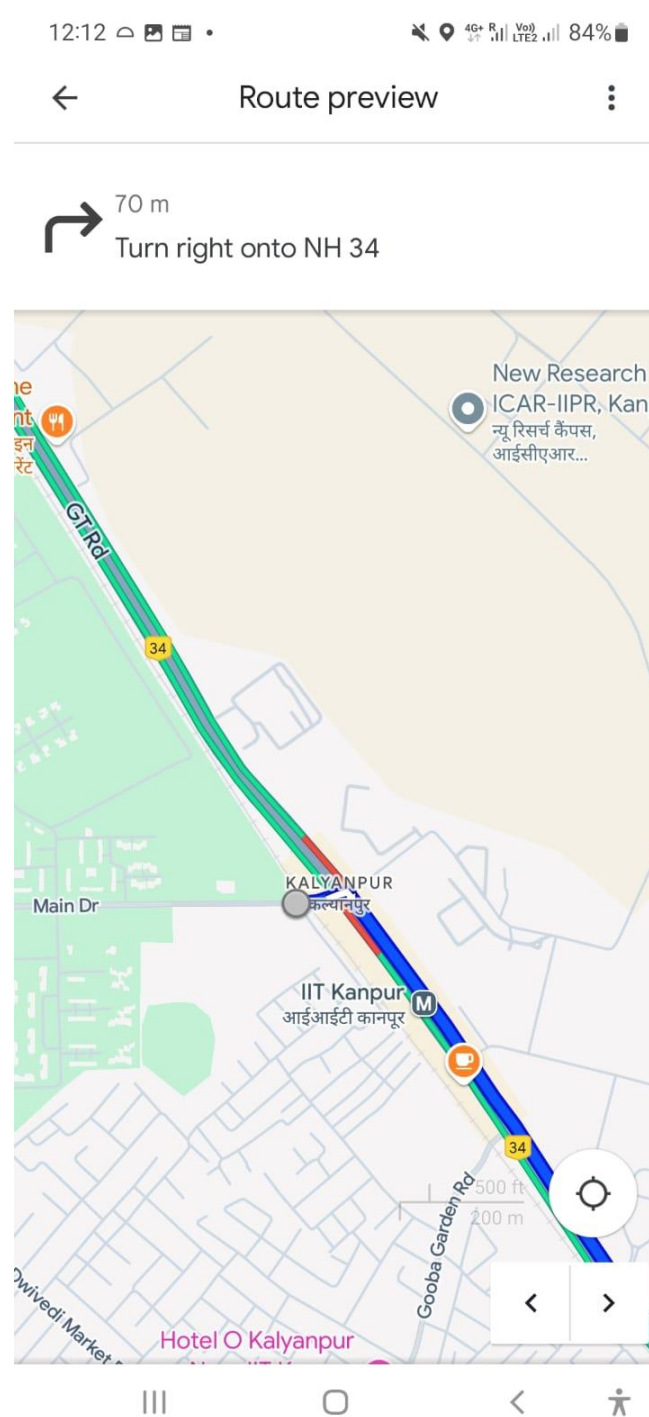
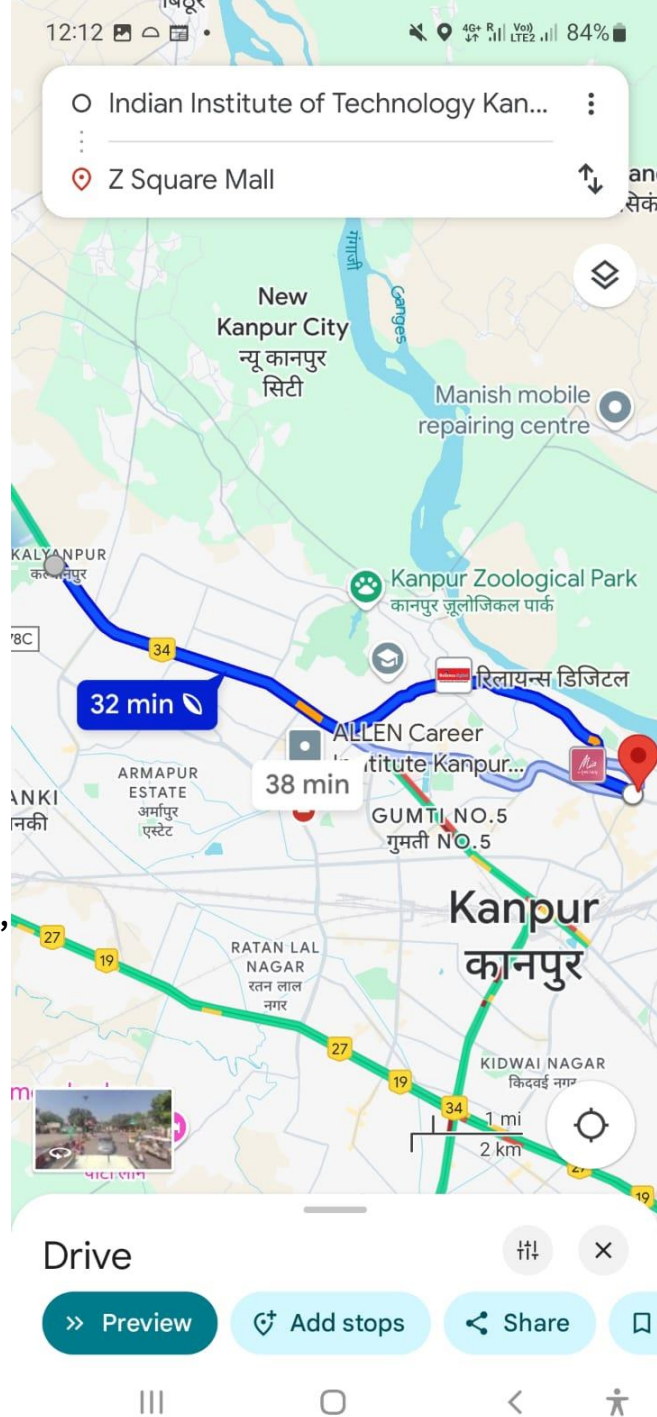
Human

Computer

Interaction

HCI is all about designing the communication between humans and computers.

Same person
Same task
(Nav from IITK to
ZSquare)
Same context
(Know distance, etc),
Different device
(Mobile).



Same person
Same task
(Nav from IITK to
ZSquare)
Same device (mobile)
Different context
(Navigate)

Same person

Same task (Nav from IITK to ZSquare)

Same device (Mobile)

Slightly different context (Drive handsfree, don't lose focus of road).

Different device form factors needed.

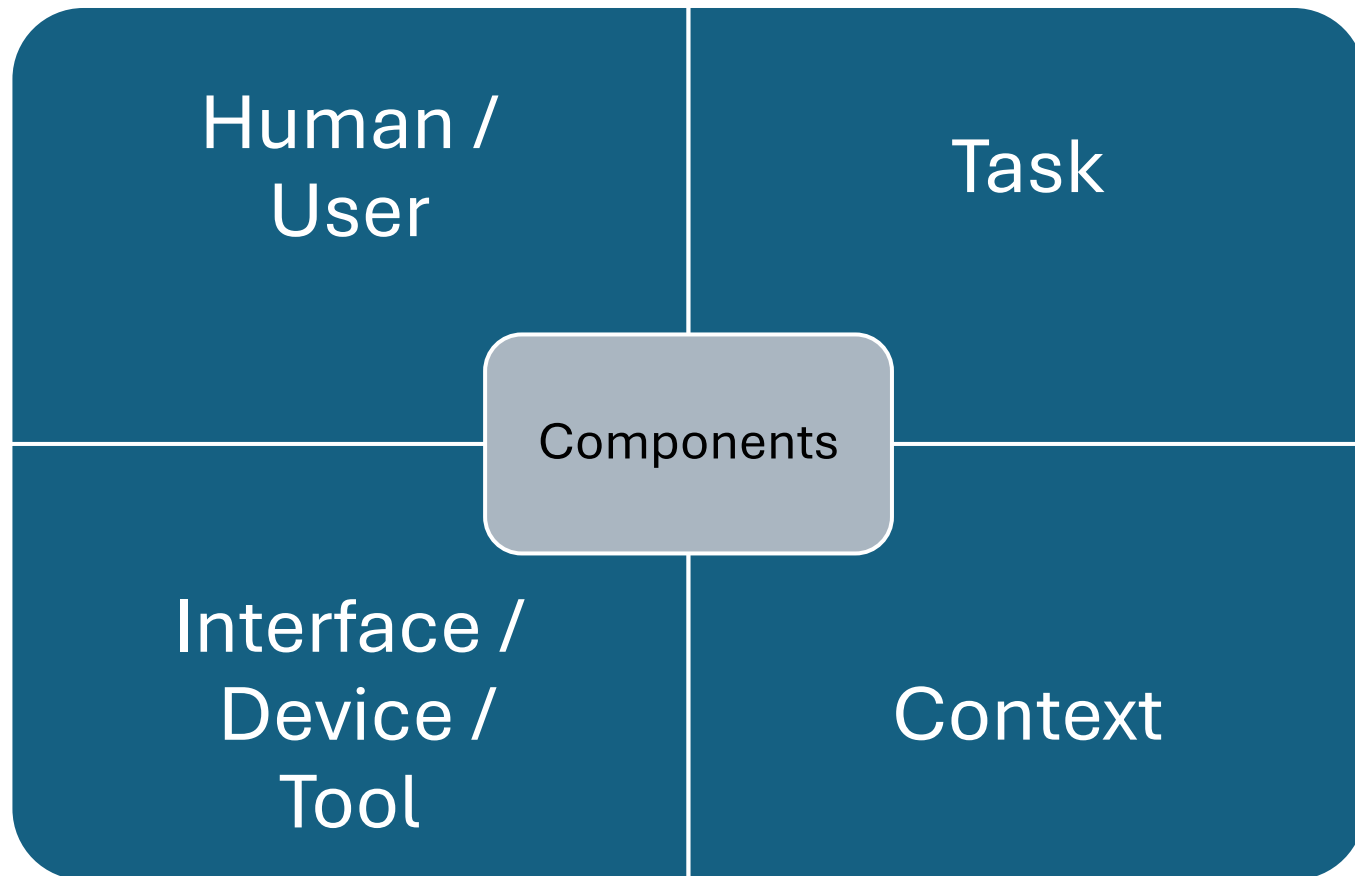


Same person
Same task (Nav from IITK to ZSquare)
Same device (Mobile)
Different context (Air directions)
Completely different view



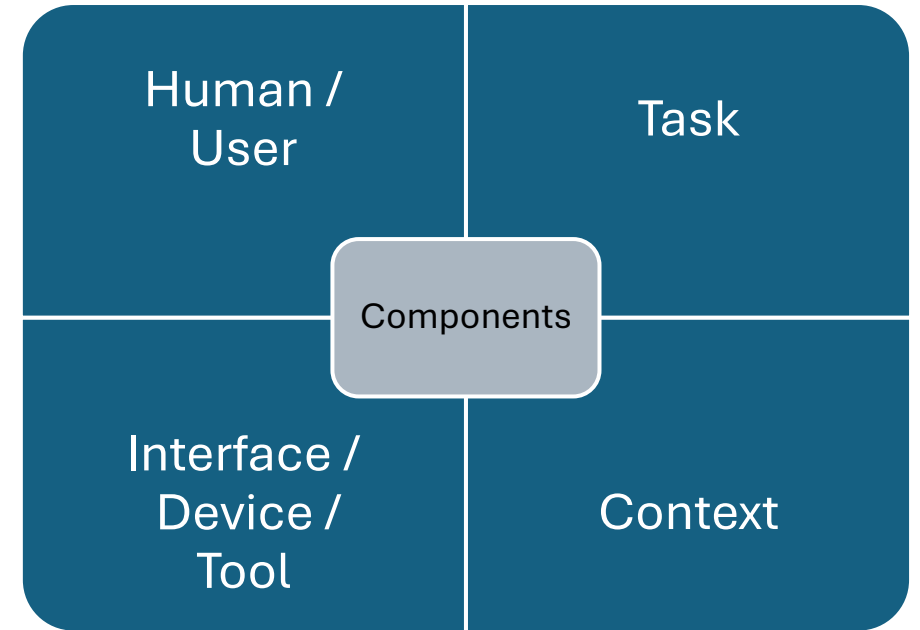
The key challenge

- Diversity in users, devices, usage context (even for the same task)



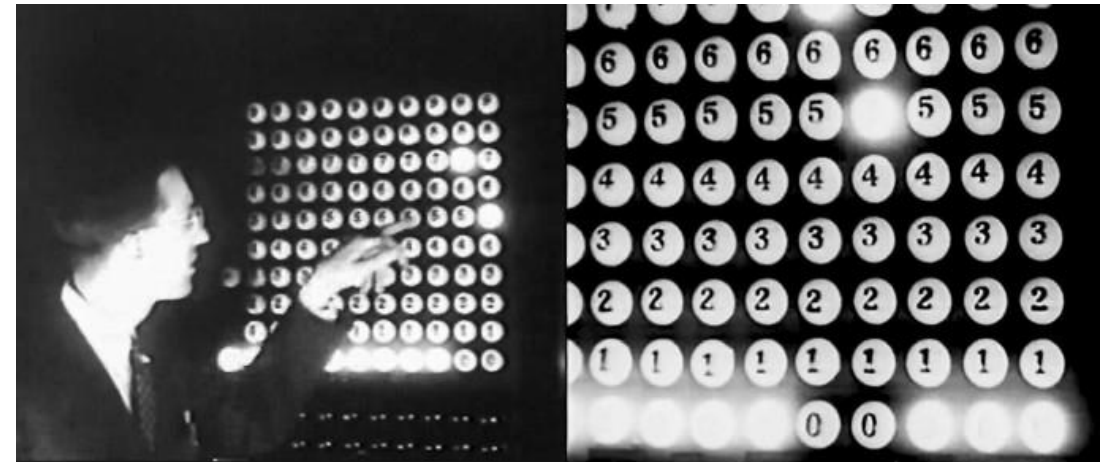
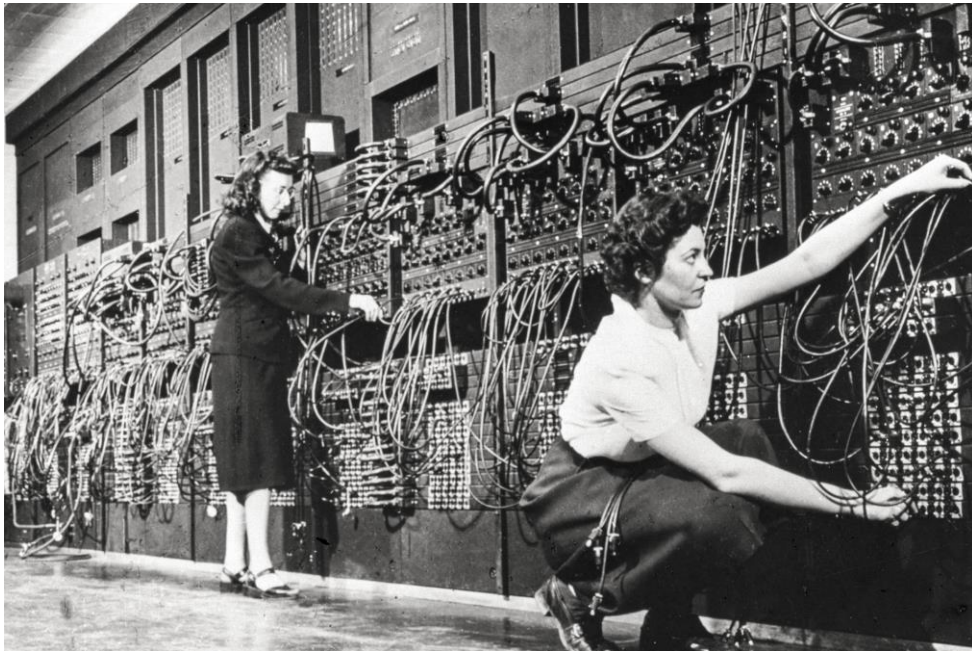
History of HCI

- Designing for various users/devices/contexts/tasks
- Various shapes, forms, flavors and focuses.



History of HCI → history of computers itself!

- ENIAC (1944-46)



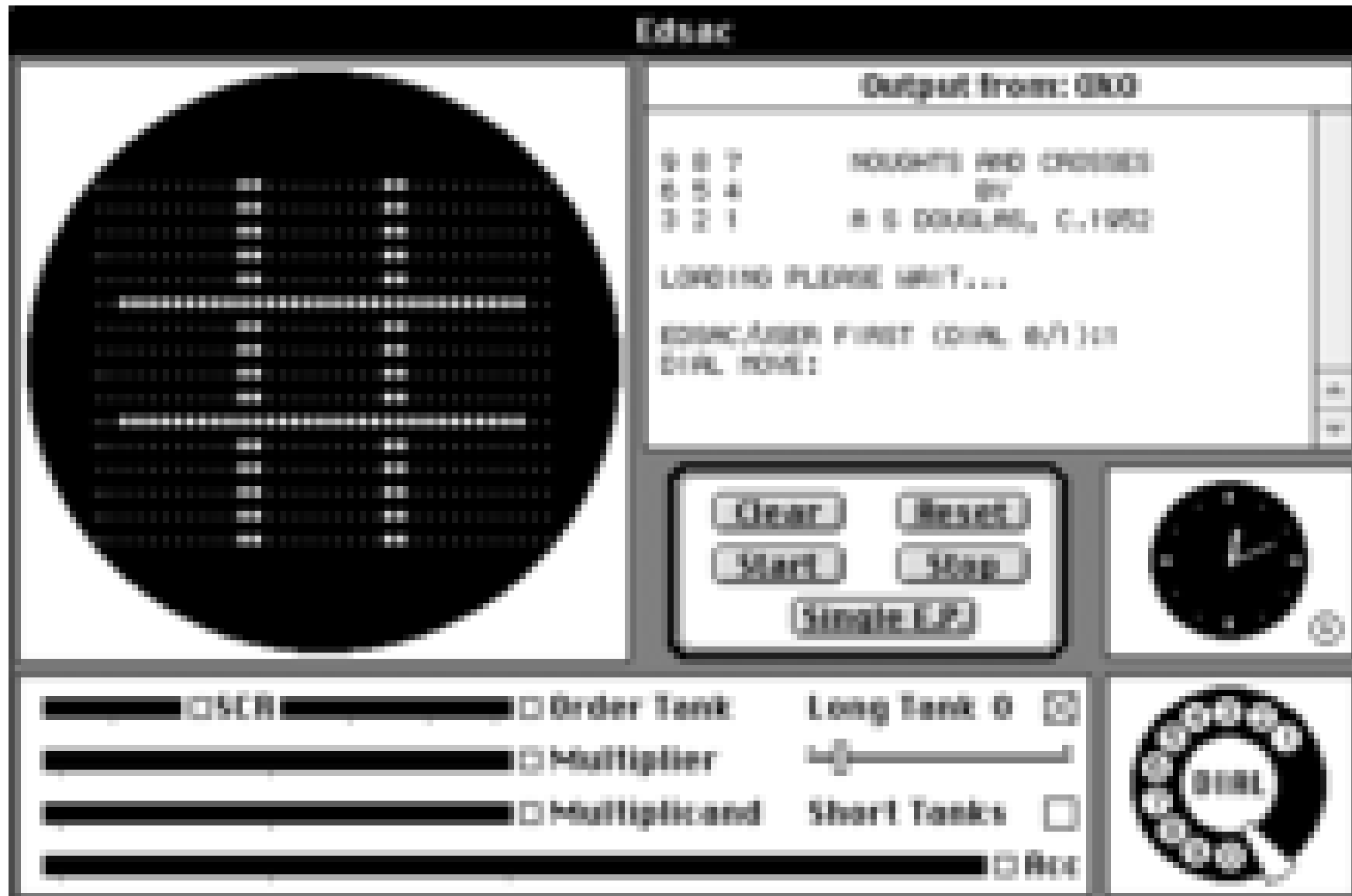
EDVAC (1949)



EDSAC (1947-49)



First video game developed for EDSAC



Vannevar Bush's “Memex” (1945)

- “As we may think” in the Atlantic Monthly
- Computers as extensions to human memory (or “memex”)
- Information storage, retrieval, linking
- Foundations for WWW, document storage, word processors, etc. among others.



UNIVAC and COBOL (1951-1954)



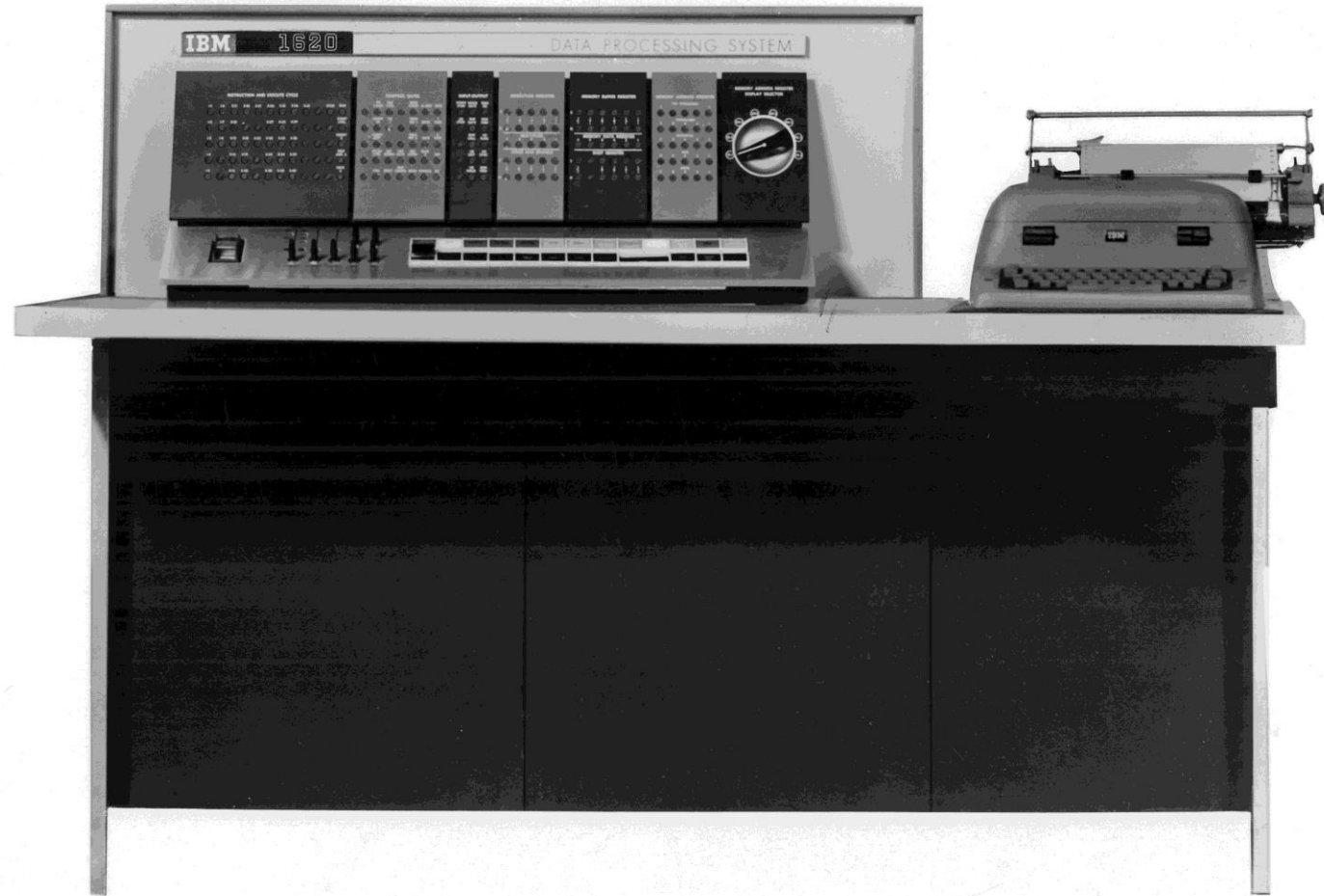
IBM 701



Ivan S

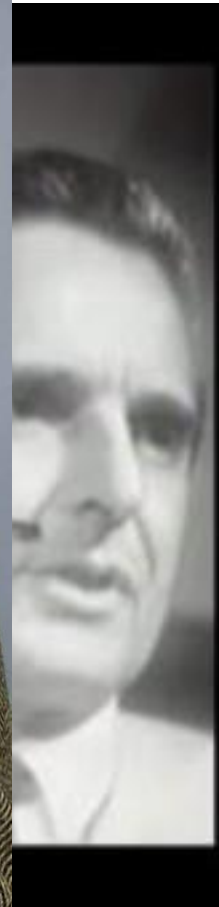
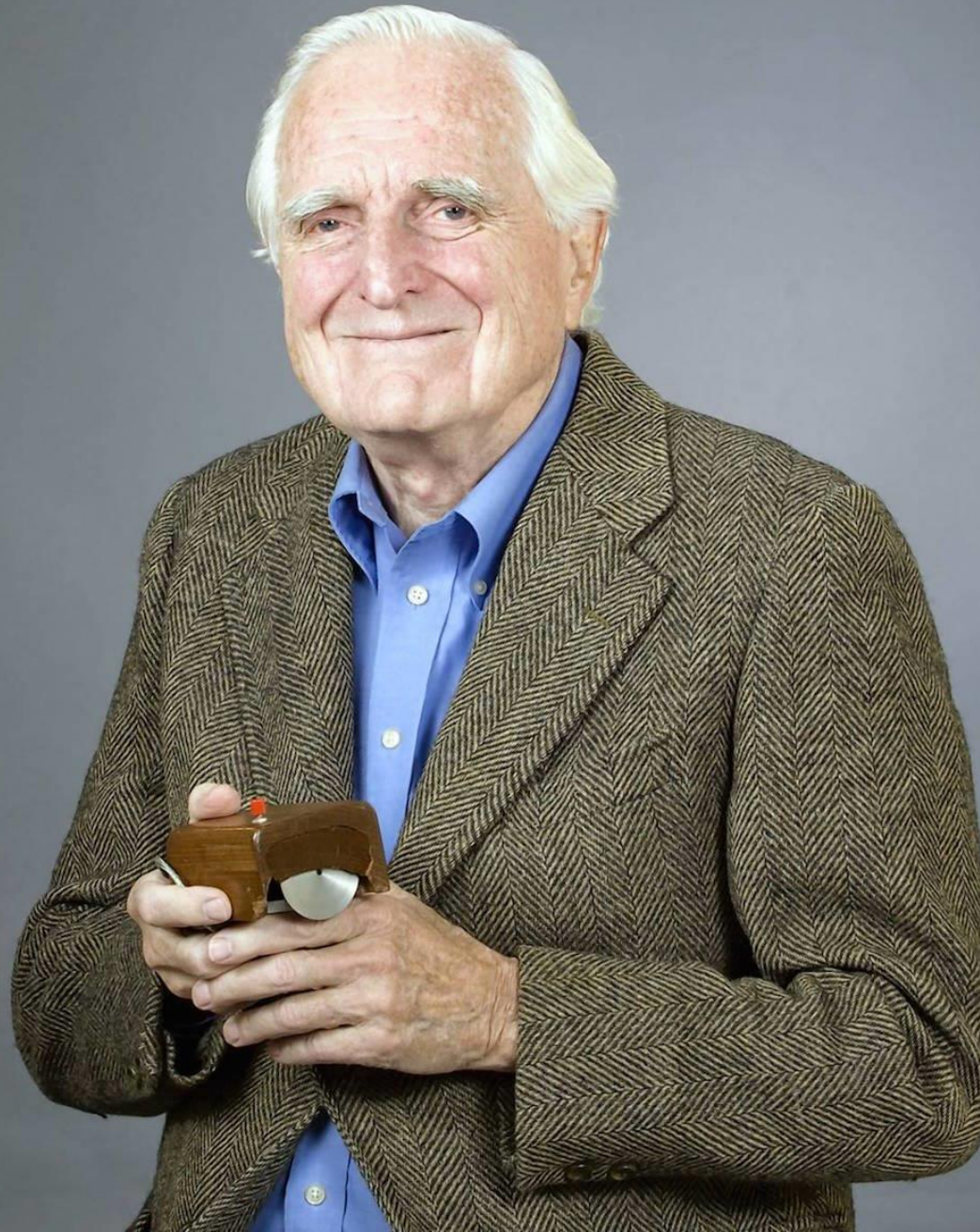
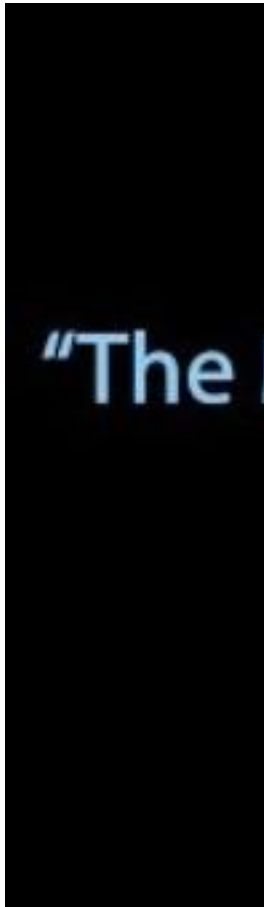


IBM 1620 @ IITK 1963





Mother of a



Personal computing (1968-)

- Term coined by Alan Kay
- A computer for every “child” (and later extended to person).



Personal computing (contd.)



C11 (L) TOTAL				C1
				25
A	B	C	D	
ITEM	NO.	UNIT	COST	
MUCK	43	1	5	
BUNCK	1	1	5	
TOMCK	25	4	12	
EY	25	4	12	
TONER	25	4	12	
SNUFF	25	4	12	
SUBTOTAL			13155.50	
9.75% TAX			1282.66	
TOTAL			14438.16	

Personal Computing and GUI





Ted Nelson and Hypertext / Xanadu



Annual ACM's HCI conference (1982)

- Birth of HCI as a field in CS, hence rather new!
- 1970s – reduce computer size, personal computing
- 1980s – 1992: 1st Wave – External Support
 - Training, documentation, customer assistance, physical form
- 1992 – 2006 : 2nd Wave – Usable and Useful
 - Consider human cognitive abilities to build stuff better!
- 2006 – now: 3rd Wave – Computers in private lives (e.g., smartphones, digital possessions), society, ethics, culture, values, etc.
- 4th wave – Who knows?

Some sample open problems today

- Interaction is largely unimodal
 - WIMP (Windows, Icons, Menus, Pointers) and Direct Manipulation
 - What about multi-modal interactions?
 - E.g., Use audio commands & point to something in context?
- How does one deal with inaccuracies of LLMs (e.g., ChatGPT)?
- Common man (non-technologist) using IoT in government / a factory?
- Why is programming still with arcane keywords?
- What about antidote to social media addiction?
- Above all, unusable systems still exist (e.g., Pingala!)

Most HCI practice is...

how to build
useful stuff
that
don't suck!



Why does that matter?

Building
useful stuff
that
don't suck
(aka, are usable)

- Useful → no one uses them, otherwise.
- Usable → Annoying, frustrating, less accessible, etc.

In this course...

- What makes stuff usable ?
 - Good vs. bad interfaces
 - What makes an interface poor?
 - How to fix bad interfaces?
- How to know what people need (and will find useful)
- Series of common interface types & their design
- Learn some human cognition, sociology, art along the way

What to expect?

- Lots of hands-on stuff
 - Work with people
 - Draw/sketch a bit
 - Readings + Watching
 - Get outside your comfort zone
 - Expect 6-8 hours of course load per week, on average

Tentative grading policy

- Exams – Midsem and possible endsem (35%)
- Assignments and quizzes (30%)
 - Individual quizzes
 - Homework assignments in pairs
 - In-class assignments individually
- Project culminating in a final presentation & report (35%)
 - Both group & individual components



Ask
Me
Anything

What next?

- What is HCI – making humans-computers communicate
 - Building useful tools/interfaces that are also usable
 - For diverse people, contexts, devices, tasks
 - Four components – user, task, context, device
 - Historical flavours
- Next class
 - What makes interfaces good and bad
 - Please bring papers / notebooks and pencils to draw on.

Readings for the week (to be added to)

- Read:
 - Vannevar Bush, “As we may think”, 1947
- Watch:
 - [Memex Animation - Vannevar Bush's diagrams made real](#)
 - Mother of all demos, full version