CIT 3300-HUMAN COMPUTER INTERACTION (HCI)

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INTRODUCTION

What is HCI?

- A study concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.

- HCI equates to usability; A usable system is easy to learn, easy to remember how to use, effective, efficient, safe, and enjoyable to use.

- **Usability** is one of the main goals in HCI.

What are the key goals / objectives of HCI?

- to improve the interactions between users and computers:

  – by making computers more usable and receptive to the user's needs.

- A **long term goal** of HCI is – to design systems that minimize the barrier between the human's cognitive model of what they want:

  – to accomplish and the computer's understanding of the user's task

Why is HCI Important?

- User-centered design is getting a crucial role

- It is getting more important today to increase competitiveness via HCI studies (Norman, 1990)

- 7 principles of Norman; *Simplify task structures, Make things visible, Get the mapping right (User mental model = Conceptual model = Designed model), When all else fails – Standardize*

- High-cost e-transformation investments

- Users lose time with badly designed products and services Users even give up using bad interface – Ineffective allocation of resources

The User Interface (UI)

- The user interface has essentially two components: *input* and *output*.

- What is an input? Examples of input components

- What is an output? Forms of output?

- A good UI will provide a blend of well-designed input and output mechanisms that satisfy the user's needs, capabilities, and limitations in the most effective way possible.

Importance of User Interface

- Poor design may even chase some people away from a system permanently. It can also lead to aggravation, frustration, and increased stress.

- A screen's layout and appearance affect a person in a variety of ways. If they are confusing and inefficient, people will have greater difficulty in doing their jobs and will make more mistakes.

- A good Interface Design will lead to:

I. Training costs being lowered because training time is reduced.

II. Employee satisfaction is increased because aggravation and frustration are reduced.

III. support line costs are lowered because fewer assist calls are necessary.

IV. Identifying and resolving problems during the design and development process also has significant economic benefits.

The History of HCI

▶ Konrad Zuse (1910-1995)

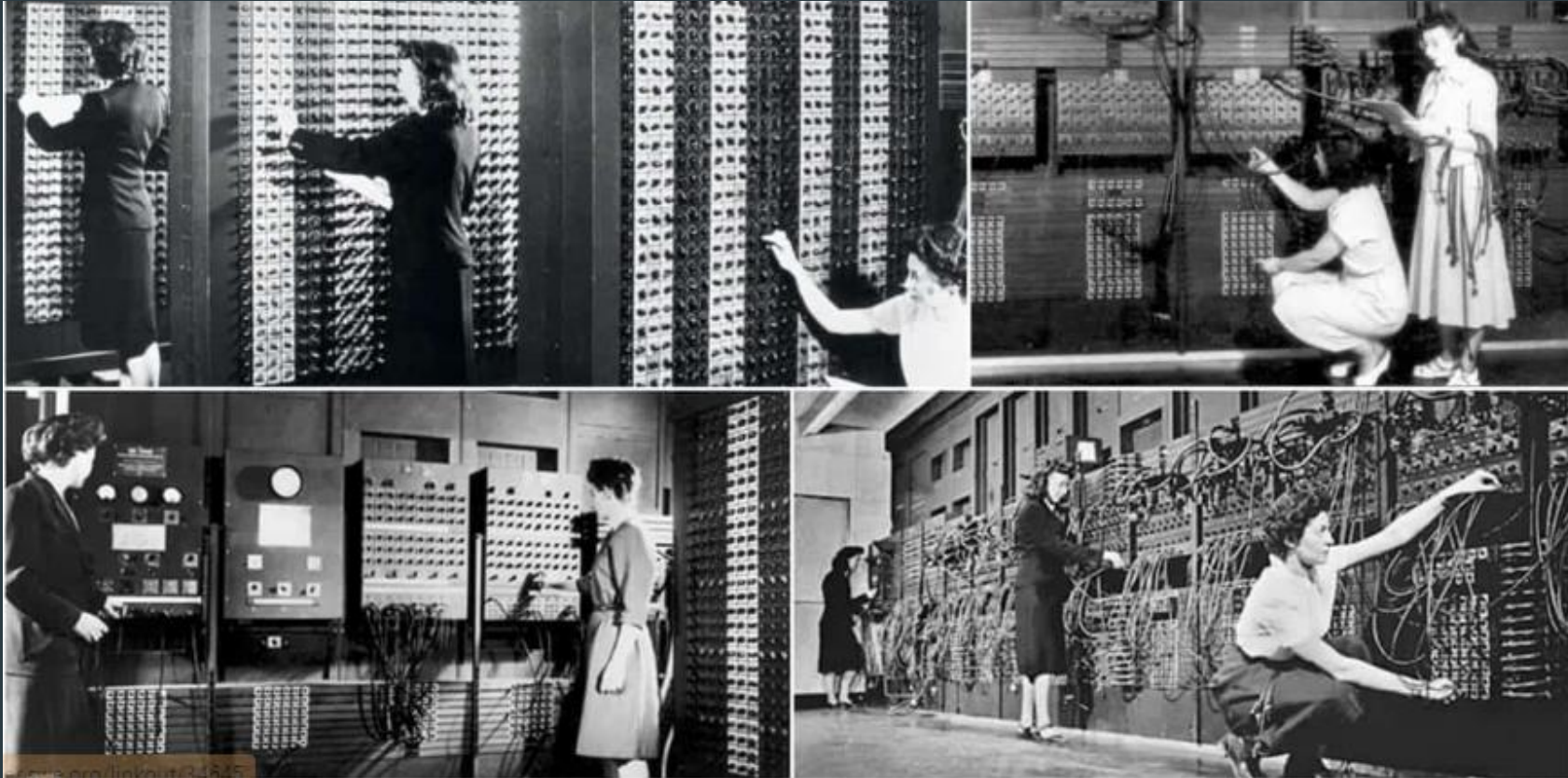- Invented the world's first programmable computer (in 1941)

Source: https://cutt.ly/7vJc1Yo

▶ ENIAC (~1946)

- First electronic numerical integrator and computer in the US

- Construction contract was signed in 1943

- The first programmers of the ENIAC were six women ("Refrigerator Ladies")

Source: https://alltogether.swe.org/2019/06/the-programming-pioneers-of-eniac/

- Memex (1945)

- SketchPad by Ivan Sutherland at MIT (1963)

  - The Sketchpad Direct dealt with manipulation of 'objects' and also paved the way for the Graphical User Interface

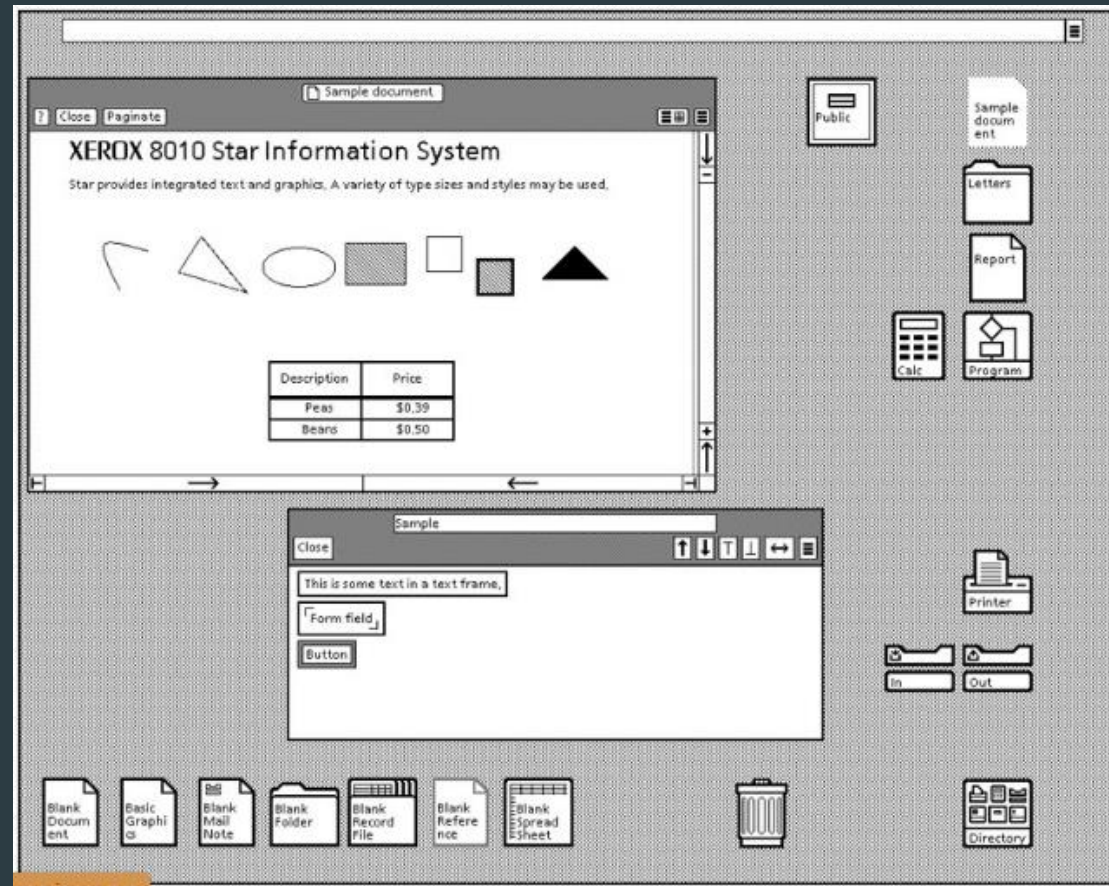 - The Sketchpad was also the first object-oriented programming system

► In a span of about 10 years later, there was massive improvement that led to the first IBM computers; VisiCalc (1979).

▶ Xerox Star (1981)

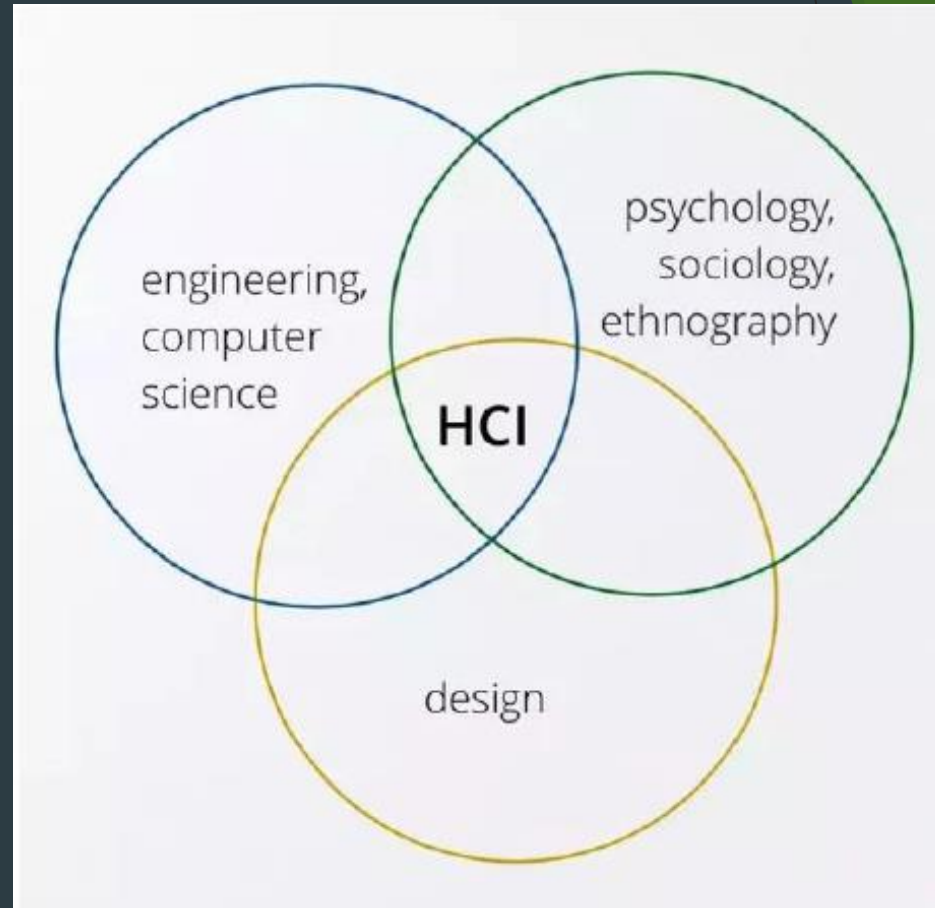- was the first commercial computer with a graphical user interface (GUI).

- ▶ Apple Lisa (1981)

- ▶ Apple Mac (1984)

- ▶ Windows 1.0 (1985)

- ▶ Windows 2.0 (1987)

- ▶ Windows 3.0 (1990)

- ▶ Windows 3.0 (1990)...

- These have been improved over the years up to the current state of highly advanced computers and finally the emergence of the *world-wide web(www).*

HCI's impact on society

- We can now use computers

as an every-moment-partner

-Less and less training is required for most application and devices

- Smartphones have changed how we spend our "empty times": should we read the news? answer emails? Chat with friends?

- Social media

Q & A