INTRODUCTION

- Why HCI important? So that computer systems are effective, easy, efficient and enjoyable to use.
- It is multi-disciplinary.
- Major problem to be dealt- Humans users and their context.
- It is more than "usability-analysis". All though it is important, it cannot be the main factor.
- Must emphasize on "task-centered design", rather than "user-centered design".
- Must be practiced or learnt in two fields at the same time ,i.e., Analytical methods and the related implementation. Either one of them cannot exist on its own.
- Computer and related devices must be designed in such a way, so that the potential users can use it seamlessly, instead of actually bothering to look for the instructions.
- It should be considered as Law, some principles to be followed are
    - suitable for the task.
    - easy to use.
    - provides feedback.
    - information must be at pace with the user.

Chapter1 THE HUMAN

- Priority one: The user and areas of human psychology or cognitive psychology- to understand his capabilities and limitations.
- Analogy to *Model Human Processor, three components:*

input-output, memory and processing.

- *INPUT-OUTPUT*
    - *Major input sensors to consider: sight, hearing and touch.*
- *VISION*
    - *Physical properties of eye to be considered, as some things cannot be perceived.*
    - *Interpretative skills to interpret the information present - prime factor. Rods (highly sensitive to light) and Cones (less sensitive). Our ability to read or perceive depends on the Rods and Cones and the way they are present in the eye. Other factors are visual angles, if very small, cannot be perceived. It is important because, this is the way we can perceive depth..*
    - *Perceiving Brightness: Visual acuity increases with increased luminance, However so does the amount of flickr.*
    - *Perceiving Color: Hue, Intensity and Saturation. Important to remember that around 8% males and 1% females suffer from color blindness, usually being unable to discriminate between red and green.*
    - *Finding a middle ground in optical illusions, eg, tendency to magnify horizontal lines and reduce vertical lines. So a square must have slightly more height and lines usually appear thicker if horizontal than vertical.*

    - *Reading and regressions. If reading material is complex, regression increases bot forward and backward.*
- *HEARING*
    - *Pitch, loudness and timbre. all important factors.*
- *TOUCH*
    - *In terms of feedback.*
    - *the feel of buttons depressing is very important for a particular task. Interfaces such as braille use the primary interface as touch.*
    - *kinesthesis: awareness of the position of body and limbs- in terms of comfort and performance features.*
- *MOVEMENT*
    - *Reaction time and its accuracy of any action.*
    - *Accuracy skills of an user: sometimes increase in reaction time may reduce the accuracy like in games.*
- *HUMAN MEMORY*
    - *Sensory Memory: they act as buffer memory and constantly overwritten by new information*
    - *Short-term memory: It is working memory for example while reading long sentences and calculations. It has limited capacity, it can be accessed rapidly, However it decays rapidly. Chunks and closure*
    - *Long-term memory: It is the main resource. Semantic memory and episodic memory can be*

related.

- *Repeated exposure by stimulus of information, transfers it from short-term to long-term memory.*

- *REASONING*
  - *Drawing conclusions or infer some information.*
  - *Deductive reasoning: logical conclusions which can be made obvious. Eg. If it is friday, she will go to work. It is friday, therefore she will go to work.*
  - *Inductive reasoning: infer information by generalized cases, but sometime we infer cases we have not seen.Eg: Does all elephants have trunks?*
  - *Abductive reasoning: abduction reasons from a fact to the action that caused it. Eg. Sam drives fast when drinking. Sam is driving fast, is he drinking? Hence not reliable.*
- *POBLEM-SOLVING*
- *SKILL ACQUISITION*
  - *learner uses general purpose rule to interpret.*
  - *he develops rules for that task.*
  - *rules are tuned up, to increase performance.*
- *EMOTION*
  - *positive emotions: thinking creatively and to solve complex problems.*
  - *Negative emotions: narrow, focused thinking.*

Chapter2 THE COMPUTER

- *Batch processing- hardly any interaction.*
- *TEXT ENTRY DEVICES*
    - *QWERTY - American and British and others possibly.*
    - *No body uses alphabetical keyboards, reason, most common letters put under the strongest fingers. Some are used in pocket devices, for maybe it is easier.*
    - *Chord keyboards: extremely compact but very difficult to use.*
    - *Phone pad- two modes one for numbers and other for letters.*
    - *Handwriting recognition: inaccurate, as it must consider stroke movement and the final shape and this very subjective.*
- *Speech recognition*
    - *97% success reported.*
    - *again it is subjective where the machine has to be trained. Noise, emotions accents are some of the factors to be considered.*
- *Mouse*
    - *footmouse: interestingly used in musical instruments as a variation*
- *Touchpads*
- *Joystics*
    - *fairly inexpensive and used as isometric.*
    - *used in playing games, because of the comfort level.*

- *tochscreens*
  - *distance from hand and screen.*
  - *very fast compared to others.*
- *cursor keys for 2D positioning.*
- *Displays- bit map*
  - *virtually all devices are variants of this.*
  - *could be black and white, gray or full color.*
  - *Number of pixels and density are factors.*
  - *anti-aliasing of jagged edges.*
- *CRT*
  - *cheap*
  - *fast response time*
  - *high color capability.*
  - *price and bulky, are disadvantages for higher quality.*
- *LCD*
  - *smaller, lighter and less power intake.*
- *Virtual reality.*
  - *Direction and orientation are considered.*
  - *cockpits and games training.*
  - *3D mouse with pitch, yaw and roll movements.*
  - *3D displays: stereoscopic vision*
  - *VR motion sickness*
- *Physical controls and its environment must be considered.*
- *MEMORY*
  - *RAM : short-term memory*
  - *DISKS: long-term memory*

- *SPEED and CAPACITY relationship between the two must be understood.*
- *Compression algorithms.*
- *storage formats and standards together with compression effects the speed and performance.*
- *Databases and methods of access to these has to be determined prior.*
- *Finite processor speed and networking speed are other factors to be considered in terms od delay and execution of tasks.*