the human o Information i/o ... – visual, auditory, haptic, movement o Information stored in memory – sensory, short–term, long–term o Information processed and applied – reasoning, problem solving, skill, error o Emotion influences human capabilities o Each person is different Vision Two stages in vision o physical reception of stimulus o processing and interpretation of stimulus The Eye – physical reception o mechanism for receiving light and transforming it into electrical energy o light reflects from objects o images are focused upside–down on retina o retina contains rods for low light vision and cones for colour vision o ganglion cells (brain!) detect pattern and movement Interpreting the signal o Size and depth – visual angle indicates how much of view object occupies (relates to size and distance from eye) – visual acuity is ability to perceive detail (limited) – familiar objects perceived as constant size (in spite of changes in visual angle when far away) – cues like overlapping help perception of size and depth Interpreting the signal (cont) o Brightness – subjective reaction to levels of light – affected by luminance of object – measured by just noticeable difference – visual acuity increases with luminance as does flicker o Colour – made up of hue, intensity, saturation – cones sensitive to color wavelengths – blue acuity is lowest – 8% males and 1% females colour blind Interpreting the signal (cont) o The visual system compensates for: – movement – changes in luminance.if wrong (different from actual system) errors can occur Emotion o Various theories of how emotion works – James–Lange: emotion is our interpretationof a physiological response to a stimuli – Cannon: emotion is a psychological response to a stimuli – Schacter–Singer: emotion is the result of our evaluation of our physiological responses, in the light of the whole situation we are in – Emotion clearly involves both cognitive and physical responses to stimuli Emotion (cont.) o The biological response to physical stimuli is called affect o Affect influences how we respond to situations – positive –> creative problem solving – negative –> narrow thinking "Negative affect can make it harder to do even easy tasks; positive affect can make it easier to do difficult tasks" (Donald Norman) Emotion (cont.) o Implications for interface design – stress will increase the difficulty of problem solving – relaxed users will be more forgiving of shortcomings in design – aesthetically pleasing and rewarding interfaces will increase positive affect Individual differences o long term – sex, physical and intellectual abilities o short term – effect of stress or fatigue o changing – age Psychologyand the Design of Interactive System o Some direct applications – e.g. blue acuity is poor blue should not be used for important detail o However, correct application generally requires understanding of context in psychology, and an understandingof particular experimental conditions o A lot of knowledge has been distilled in – guidelines – cognitive models – experimental and analytic evaluation techniques ."LTM – Storage of information o rehearsal – informationmoves from STM to LTM o total time hypothesis – amount retained proportional to rehearsal time o distribution of practice effect – optimized by spreading learning over time o structure, meaning and familiarity – informationeasier to remember LTM – Forgetting decay – informationis lost gradually but very slowly interference – new informationreplaces old: retroactive interference – old may interferewith new: proactive inhibition so may not forget at all memory is selective ... ... affected by emotion – can subconsciously `choose' to forget LTM – retrieval recall – informationreproduced from memory can be assisted by cues, e.g. categories, imagery recognition – informationgives knowledge that it has been seen before – less complex than recall – information is cue Thinking Reasoning :is a means of inferring new informationfromwhatis

already known deduction, induction, abduction Problem solving Deductive Reasoning o Deduction: – derive logically necessary conclusion from given premises.Touch o Provides important feedback about environment.