

Affective Computing

Affective computing involves the study and developments of systems that can recognize, interpret process and simulates human affects. It combines Computer science, Human psychology and Cognitive science. The modern research on Affective Computing originated with the studies of **Rosalind Picard in 1995**. The motivation behind the Affective computing is the ability to simulate the empathy of human beings. By using this technique, the device will detect and interpret the emotional state and adapt its behaviour. This gives the appropriate response to the emotional state.

Affective Computing involves the stages like

1. Collecting emotional informations

This involves collection of the emotional information using **Passive sensors**. The sensors capture informations like the physical state and behaviour of the person. The input data is similar to the cues by which human beings detect emotional states of other people. The passive sensors may be a **Video camera** that captures facial expressions, body language or a **Microphone** that collect speech. Other sensors used in the device measures physiological states in emotion such as Skin galvanic response.

2. Design of Computational devices

These devices simulate the emotional states or have innate emotional capabilities. Human emotions are associated with the secretion of hormones and brain neuro peptides while in emotion machine; it is the abstract states associated with **Autonomous learning systems**.

3. Emotional Speech

This approach involves the recognition of the person's emotion by analyzing the speech pattern. Speech parameters such as speech rate, pitch variations etc are analyzed through **Pattern recognition methods**.

4. Facial expression

Facial expressions in various states of emotion can be collected and analyzed. **Multimodal recognition method** involves collection of more than one data in a combined fashion such as facial expression and speech or facial expression and hand movements. Body gesture, hand gesture etc are also used to detect the emotional states.

Affective computation has potential applications in the field of **e-learning**. The machine will identify the quality of the lecture whether the learner is interested or bored, so that the presentation style can be changed. **Clinical psychology** can utilize the use of affective

computation during counseling to analyze the emotional state of the patient. **Robotics based systems** can process informations if the person is working in a complex environment. Affective computing can be used for **Social Monitoring**. For example, if the machine is connected in a vehicle, it can monitor the behaviour of the passengers and can give appropriate directions. If the driver is in high state of emotion due to **Road rage**, the machine can warn other vehicles about the danger. Another use of Affective computing is the use of **Affective Mirrors** to see the performance of persons, so that the machine can warn the person before showing a bad behaviour. Affective computing can also find potential applications to deal with persons having **Autism**.

dmohankumar.wordpress.com