# Importance of Social Interactions:

## Involvement into the Society:

## Psychological Support:

## Social Intelligence:

Some studies in cognition support the hypothesis that social interactions play a vital role in the overall development of primate brain, especially in the development of Social Intelligence. . Primate researcher, Humphrey [5], has argued strongly that social interaction is key to cultural transmission of knowledge and the development of intelligence. His studies with rhesus monkey [6] have emphasized the positive influence of social interactions on the development of general intelligence. For example, Helen (a rhesus monkey) had her visual cortex surgically removed and studies were conducted on her recovery of spatial vision. Over four years in the laboratory, Helen hardly recovered any of her spatial knowledge. However, when she was taken out of the laboratory into the real world and allowed to interact with objects and other monkeys, she regained three dimensional spatial vision within a few weeks.

Social intelligence has recently gained momentum from a neuro-physiological perspective. Advanced functional brain imaging is enabling researchers to study the workings of human brain under various functional conditions. Brothers [7] has worked extensively on the neuro-physiological patterns in primate brains that are associated with social behavior. Her work has established the presence of brain regions that are dedicated to *social cognition* (Social cognition is the processing of information that culminates in the accurate perception of dispositions and intentions of other people). She has proposed a network of neural regions that comprise the social brain: the orbito-frontal cortex (OFC), superior temporal gyrus (STG) and amygdala. Her work has been recently bolstered by studying autistics under functional Magnetic Resonance Imaging (fMRI) [8]. The subjects watched another person’s eye expressions, and guessed what that person was thinking or feeling. The fMRI images confirmed Brothers observations of STG and amygdala activations during social cognition, and showed that people with autism display a cognitive disability in the amygdala which prevents them from making appropriate mental inferences of other people’s emotions or facial expressions. Authors conclude that a social brain does exist, and that teaching children and adults social skills could offer a means of increasing activations in the social brain. This conclusion is supported by behavioral research in autism that employs social interaction training and language skill training in children, to ameliorate the social deficits characteristic of autism spectrum disorders (ASD). Thus, social interactions also provides a knowledge building loop that develops intelligence of the world around the individual.

## Summary:

# Disability is a hindrance to Social Interaction:

## Focus on Visual Impairment.

## Summary:

# Non-verbal Cues:

## Summary:

# Sensing Non-verbal Cues:

## Egocentric sensing

## Exocentric sensing

## Summary:

# Processing Non-verbal Cues:

## Summary:

# Delivering Non-verbal Cues:

## Summary:

# Design of assistive technology:

## Summary:

# Research Questions:

What are the most important non-verbal cues that are important for enriching social interactions for people who are blind and visually impaired?

What assistive technology framework can be developed towards addressing the important needs identified in research question 1?

Given the above framework, how effectively can the egocentric and exocentric social interaction cues be extracted in real-time?

How effectively can the interaction partner’s non-verbal cues be delivered to individuals who are blind and visually impaired?