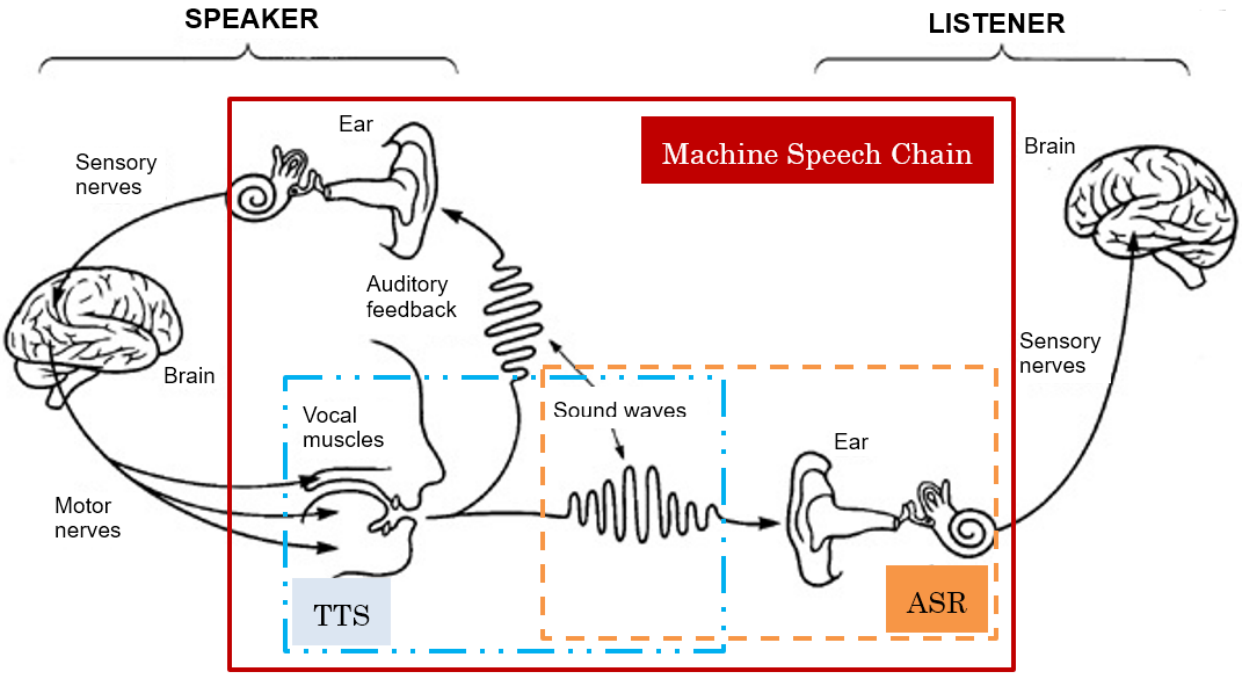
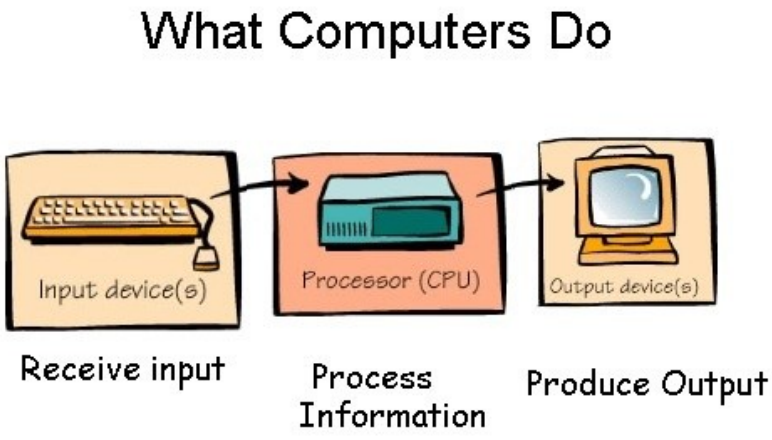
1 What do we do when we speak and listen?



2 How do computers speak and listen? How good are they?



3 How would you match the parts of the computer diagram with the brains, ears, and mouths in the first diagram?

4 How do we come by our knowledge of language?

Much of our knowledge of language is learned but not taught.

1. The words below are taken from dictionaries from different languages. Some of these words are English words. Which ones?

   ptak thole hlad plast sram mgla vlas flitch dnom rtut

   How did you know which ones were English words?

2. Samala is an American Indian language orginally spoken around the area of Santa Barbara, California. Samala speakers would recognize the bold words below as possible Samala words, but not the other ones. Note [ʃ] is pronounced [sh] as in 'shoe'.

   kaʃinaʃmu alamaspaxanuswunpi niʃokʃok qutinowon wasisin
   yuqʃusu heswaʃin istuxunaʃ maqʃumes

   Samala speakers are taught this pattern about their words, but somehow they come to know it. How?

5 Can computers learn languages like people?

1. How could a computer check whether a word begins with an illegal sequence of sounds like [pt]? If it could, it could tell you that *ptak* is not a word of English. How could it learn to check things like this?

2. How could a computer check whether a word contains a [ʃ...s] or [s...ʃ] sequence or not? If it could, it could tell you that *heswaʃin* is not a word of Samala. How could it learn to check things like this?

(These are very simple examples, but even for complicated tasks like speech recognition and machine translation, there is a kernel of truth here.)

Acknowledgments

DEPARTMENT OF LINGUISTICS STONY BROOK

iACS INSTITUTE FOR ADVANCED COMPUTATIONAL SCIENCE

Stony Brook University