

The UB Talker

What is The UB Talker?

- Classified as an Augmentative and Alternative Communication device, also known as an AAC device
- Aids in communication through the use of electronic text-to-speech
- Software to be used on a laptop or tablet

Software

Main Screen (Onscreen Keyboard)

- Upon clicking a given row, the cursor automatically scans through each letter in that row
- Selected letters appear in the text field at the top
- "Word" buttons update to include the most relevant words
- Words can be spoken one at a time or combined together
- User can choose to play back each letter as it is typed in

Alternate Screen (Commonly Used Phrases)

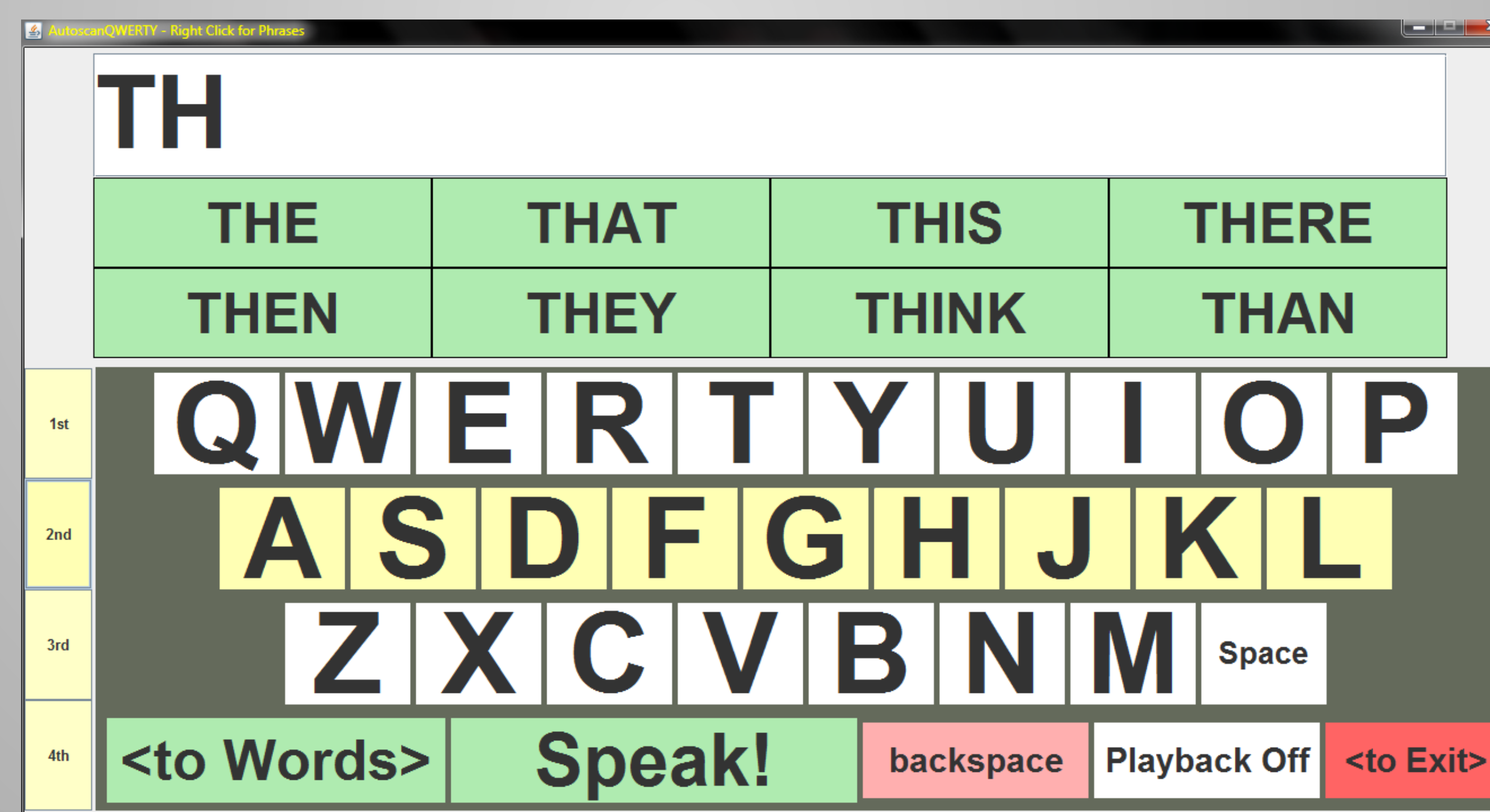
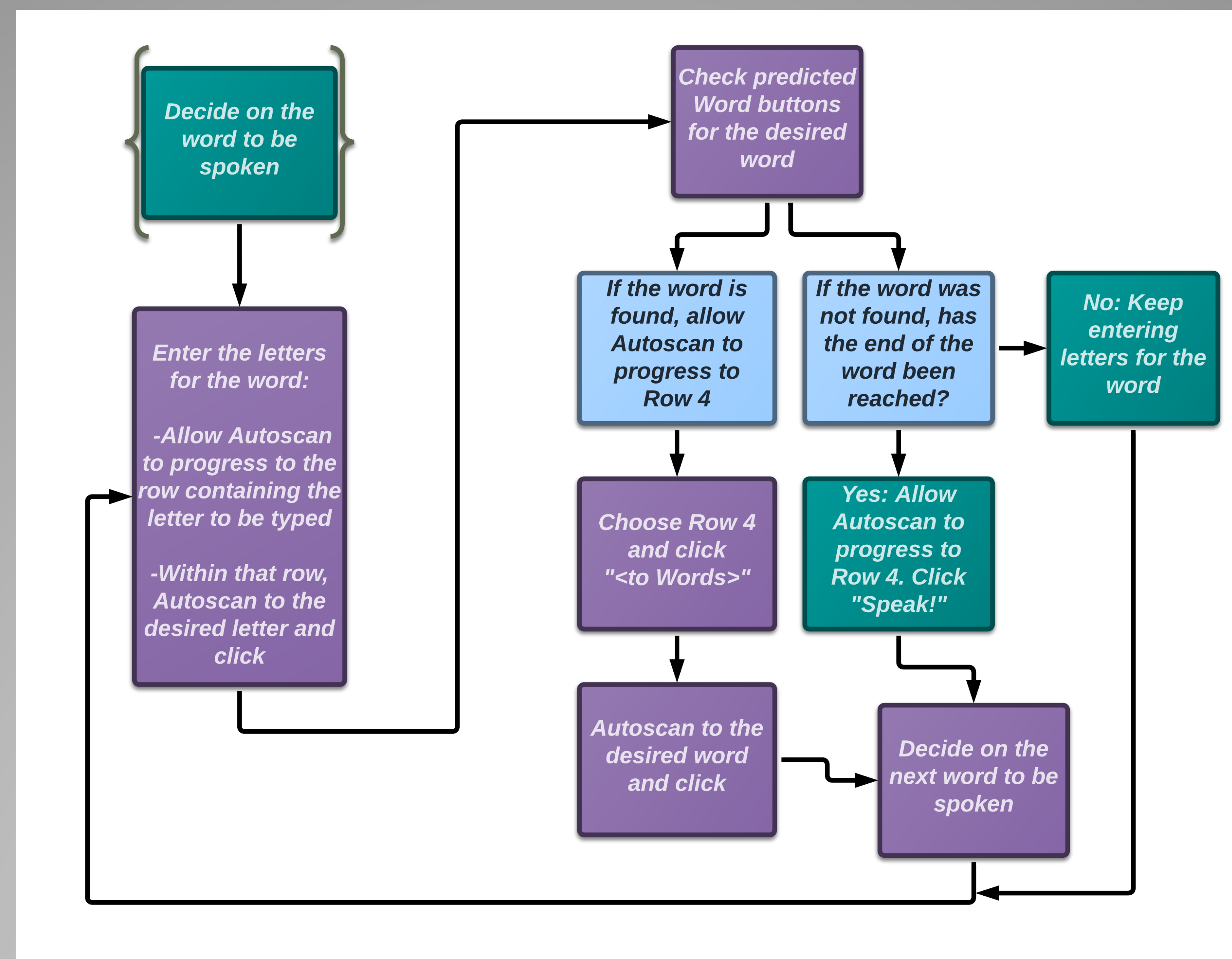
- Appears/disappears upon right-mouse button click
- Upon (left) clicking, the chosen phrase is spoken and displayed
- Phrases can be edited by amending a simple text file

Both Screens

- Use synthesized speech
- Rate of automatic scanning adjustable to user's needs by amending a simple text file
- With every letter that is entered, the Python script takes an input from the main Java application
 - Script searches a dictionary for existence of relevant words
 - Displays words on main screen "word" buttons in order of:
 - Relevance
 - Frequency of appearances in a sample text file
- Upon speaking, words are appended to the end of this text file to update frequency.

Hardware

- USB Buttons
 - Replace the mouse as a selection device
 - Left mouse button for selection
 - Right mouse button for switching screens
- Windows Tablet/PC



Future Work

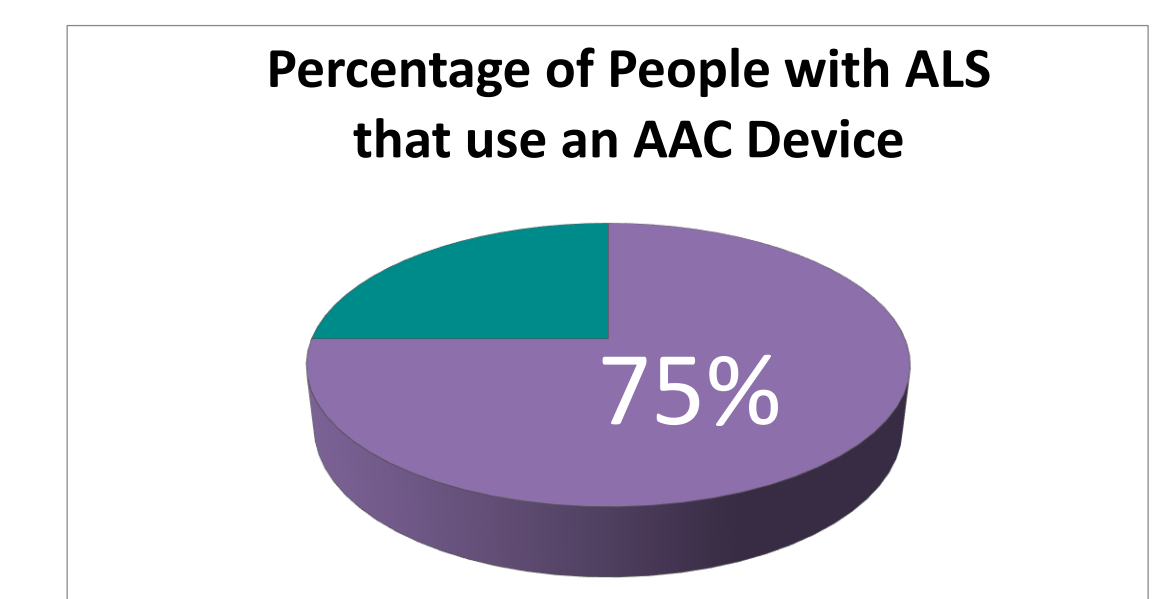
Brain Computer Interfaces (BCI)

- Capable of detecting basic thought patterns
- Thought patterns can be translated to a cursor movement
- Can be used in many different settings:
 - Nursing homes, rehabilitation facilities, hospitals
 - In educational settings allows developmentally disabled individuals, such as those with Autism, to communicate more effectively
 - In the workplace, allows individuals who were previously at a disadvantage to communicate with employers and clients

Why ALS?

- Amyotrophic Lateral Sclerosis (ALS) is a neurodegenerative disorder whose symptoms are progressive
- The symptoms of ALS closely parallel some of the symptoms of other disorders such as traumatic brain injuries and stroke, and therefore ALS is a perfect target disorder for which to attempt to develop the UB Talker

If the UB Talker can be adapted to an ALS patient, then it can be used by almost anyone who needs it.



Medical Benefits of The UB Talker

- Approximately **2.5 million** Americans experience speech impairment to the degree of having significant difficulty being understood
- Use is case-specific
- Eases communication between patients and caregivers
- Can be used in a variety of language/literacy disorders
- Can be used whether one's condition is temporary or permanent
- An alternative to reliance on sign language, letter boards, or pictures
- Improves overall quality of life for all patients

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