College of Engineering
Department of Mechanical & Industrial Engineering

College of Engineering
School of Electrical Engineering & Computer Science

To Predict ▶ To Design ▶ To Perform
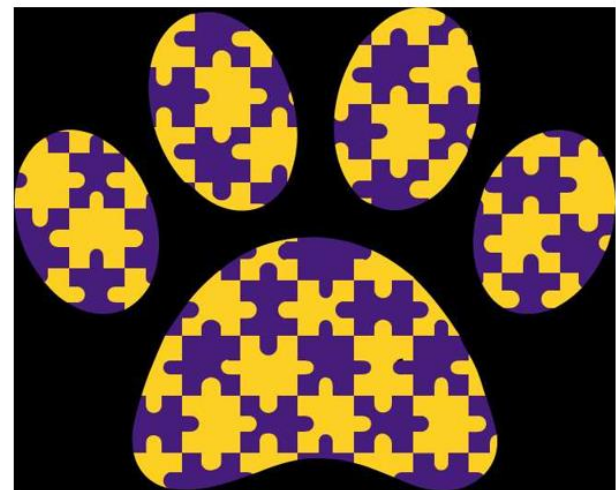
ME, ECE Capstone Design Programs

Team #57: Augmentative and Alternative Communication Diagnostic Tool

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Autism | AAC Lab LSU

Background Information

Individuals with disabilities use Augmentative and Alternative Communication (AAC) to communicate without their voice, these include Parkinson's disease, ALS, cerebral palsy, etc. Speech-language pathologists (SLPs) are often not able to equip a patient with the appropriate device because there is no standardized tool to guide the diagnostic process. This leads to false device choices which in turn leads to failure of use of the device.

Objective Statement

Create a web application that aids in the diagnostic process for an appropriate AAC device.

Key Features

Detects unsupported files	Displays an error message when the user uploads a file not saved from the assessment
Tracks assessment progress	Progress bar updates according to the amount of questions answered
Detects unsaved work	Displays an alert when the user forgets to save their assessment progress before leaving the page

Engineering Specifications

Quantitative Specs	Metric
AAC assessment process	≤ 2 hours
Number of app crashes	0
Qualitative Specs	**Metric**
User Interface	User-friendly
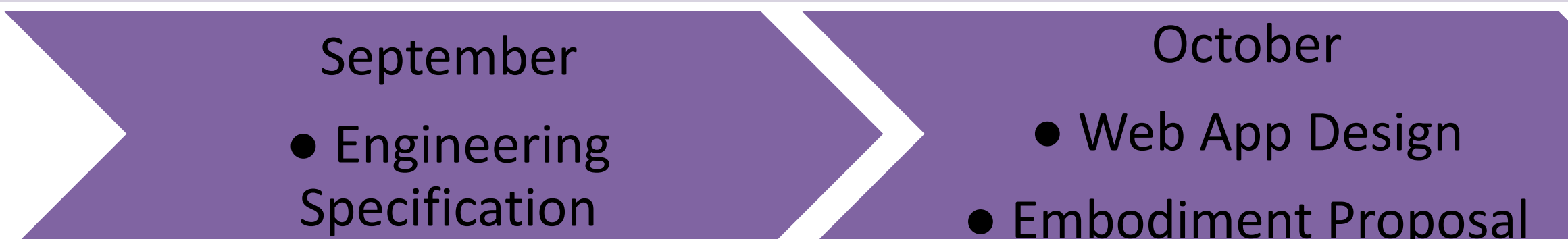
User Interface

Augmentative and Alternative Communication Diagnostic Tool

If you would like to access a previous AAC assessment, please upload the appropriate file below.

Choose File   No file chosen

Otherwise, click the button below to start a new AAC assessment.

Start AAC assessment

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AAC Assessment Summary

Name of Patient: _____
Date: _____

Motor Skills & Access Methods Assessment

Fine Motor Related to Computer (or Device) Access

1. Observe the patient using paper and pencil, typewriter, computer, switch, etc. Look at the movements as well as activities and situations. The patient has voluntary, isolated, controlled movements of the following:

   Left arm

2a. Does the patient have limitations to range of motion?
   No

3a. Does the patient have abnormal reflexes or abnormal muscle tone?
   No

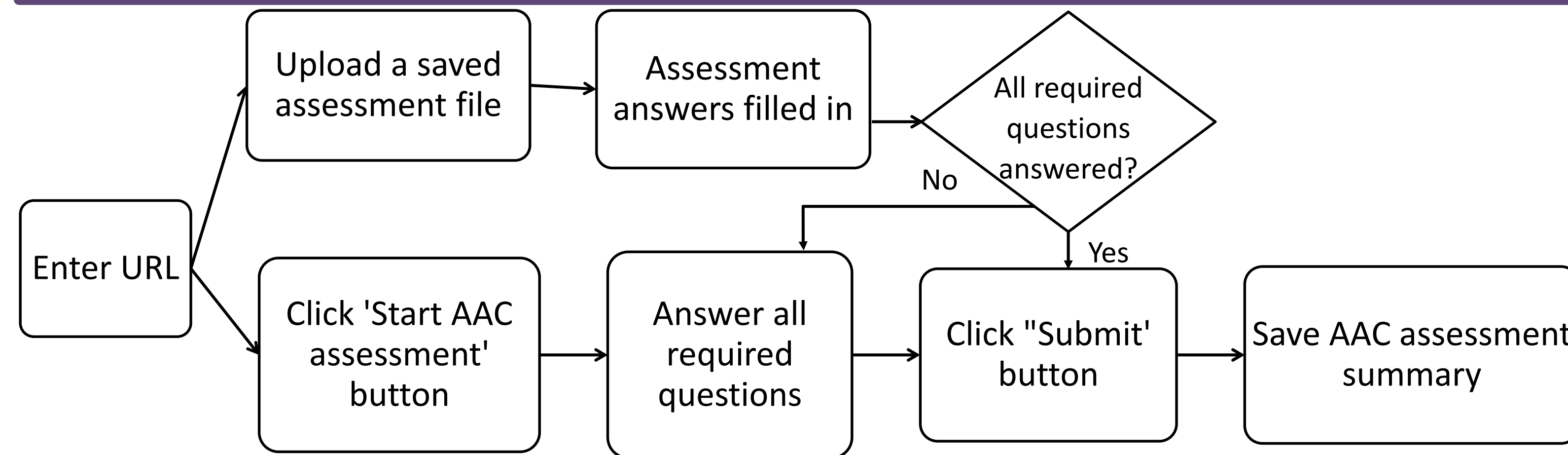4a. Does the patient have difficulty with accuracy?
   No

AAC Diagnostic Tool
AAC Assessment

00:01:41   Pause Resume Save

Motor Skills & Access Methods Assessment	✓
Communication Assessment	✓
Recreation & Leisure Assessment	✓
Seating & Positioning Assessment	✓
Vision Status	✓
Audiological Status Assessment	✓
Comments	

Motor Skills & Access Methods Assessment
100%

Fine Motor Related to Computer (or Device) Access

1. Observe the patient using paper and pencil, typewriter, computer, switch, etc. Look at the movements as well as activities and situations. Does the patient have voluntary, isolated, controlled movements, using the following? (Check all that apply.)

☑ Left hand ☐ Right hand ☐ Eye(s)
☐ Left arm ☐ Right arm ☐ Head
☐ Left leg ☐ Right leg ☐ Mouth
☐ Left foot ☐ Right foot ☐ Tongue
☐ Finger(s) ☐ Eyebrows ☐ Other

2a. Does the patient have limitations to range of motion?
○ Yes ● No

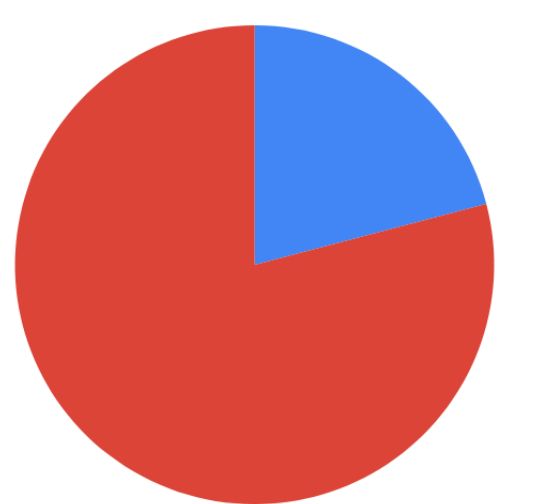2b. Describe the specific range in which the patient has the most motor control. (Optional)
   Enter comments here

Submit

Program Flowchart

Enter URL →
- Upload a saved assessment file → Assessment answers filled in → All required questions answered?
  - No
  - Yes → Save AAC assessment summary
- Click 'Start AAC assessment' button → Answer all required questions → Click "Submit" button → Save AAC assessment summary

Technology Stack

HTML5 CSS3 JS Notepad++ Microsoft Visual Studio

Budget Management

Total Amount: $100

● JIRA Software - $20.9
● Leftover Expenses - $79.1

Sponsors: Dr. Daphne Hartzheim

Advisers: Dr. Jerry Trahan