

CSI: Code Speech Interface

By Fraser McIntosh and Max Griffith – Project #98



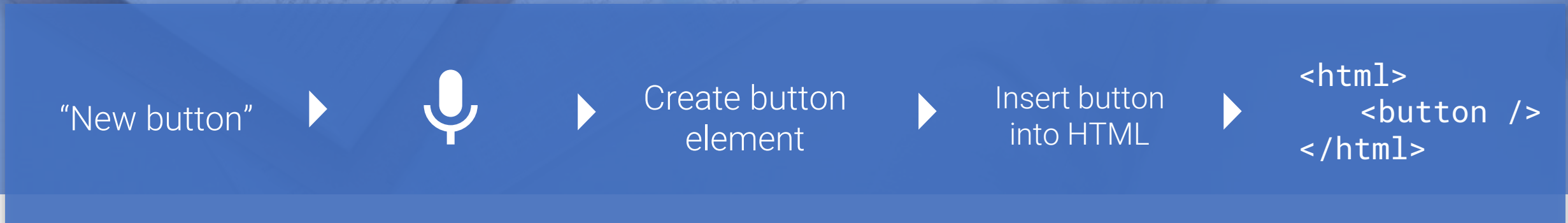
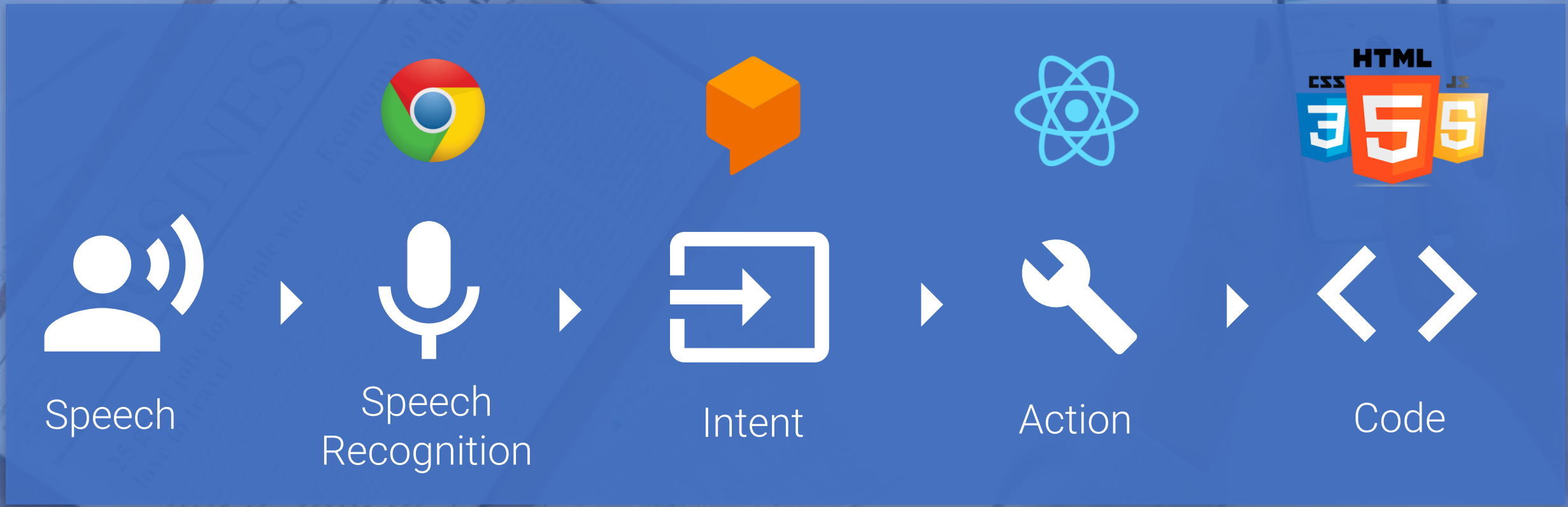
Motivation

People who use a keyboard for 4-6 hours a day have increased risk of suffering from Repetitive Strain Injury (RSI). For software programmers, using a keyboard is vital for performing their job. Programmers with RSI are faced with the choice of stopping work to recover, or continuing and increasing the problem.

Project Goals

- Create a speech programming interface
- Program using natural commands
- Make a website using only voice commands

Architecture



Capturing Intent

Users can say different things that mean the same thing

Users need to perform the same action on different components

Training Phrases

Phrases that will match with the intent

Slots

Words in a training phrase that are variables

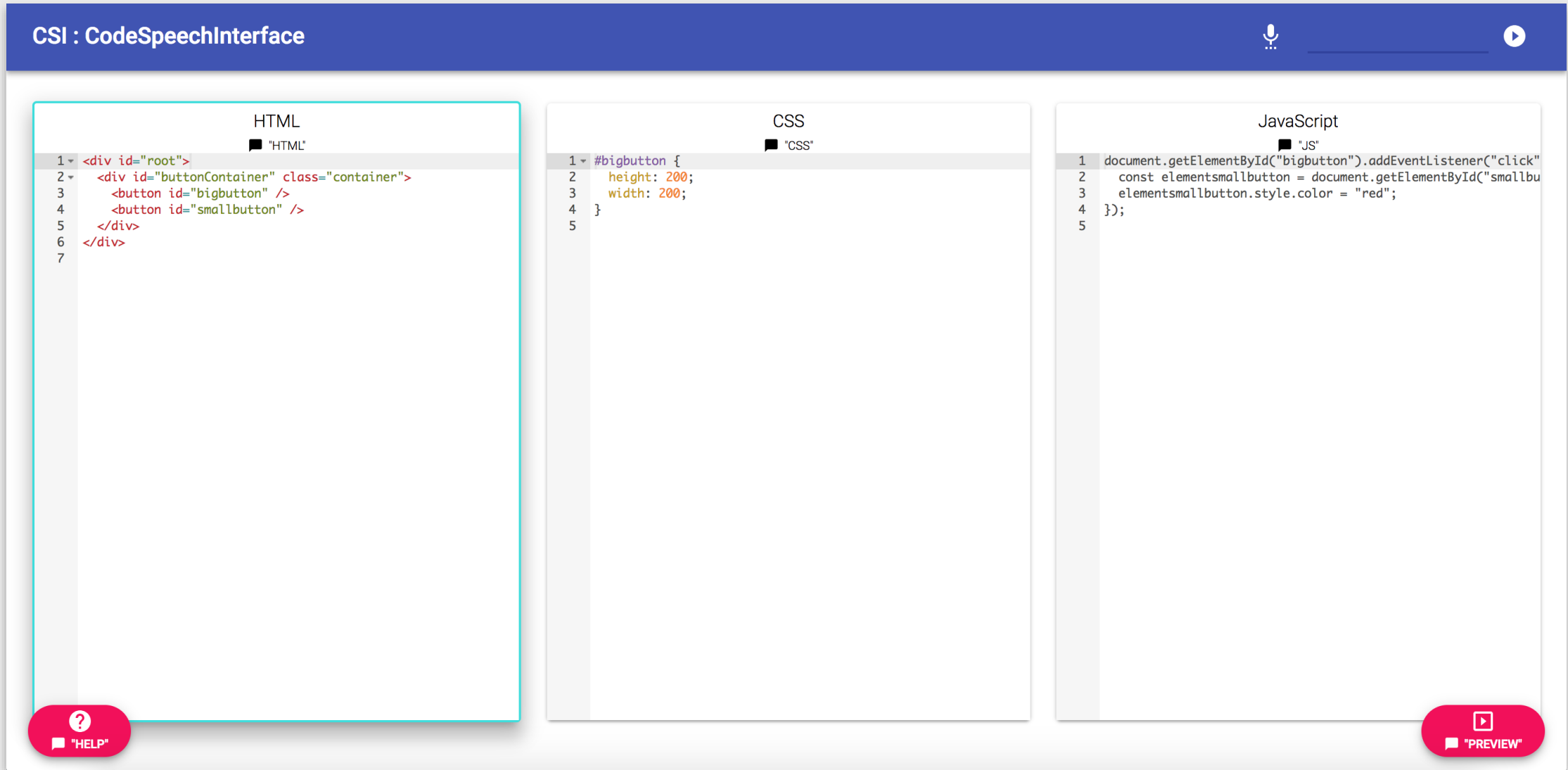
Intent

What the user is trying to do

Variables

Extracted from the slot position

Features



HTML

- Create element
- Div, button, input elements supported
- Set element id and class
- Set element text
- Delete element



CSS

- Style by id, class or element type
- Set text color
- Set background color
- Set width and height
- Set margin



JavaScript

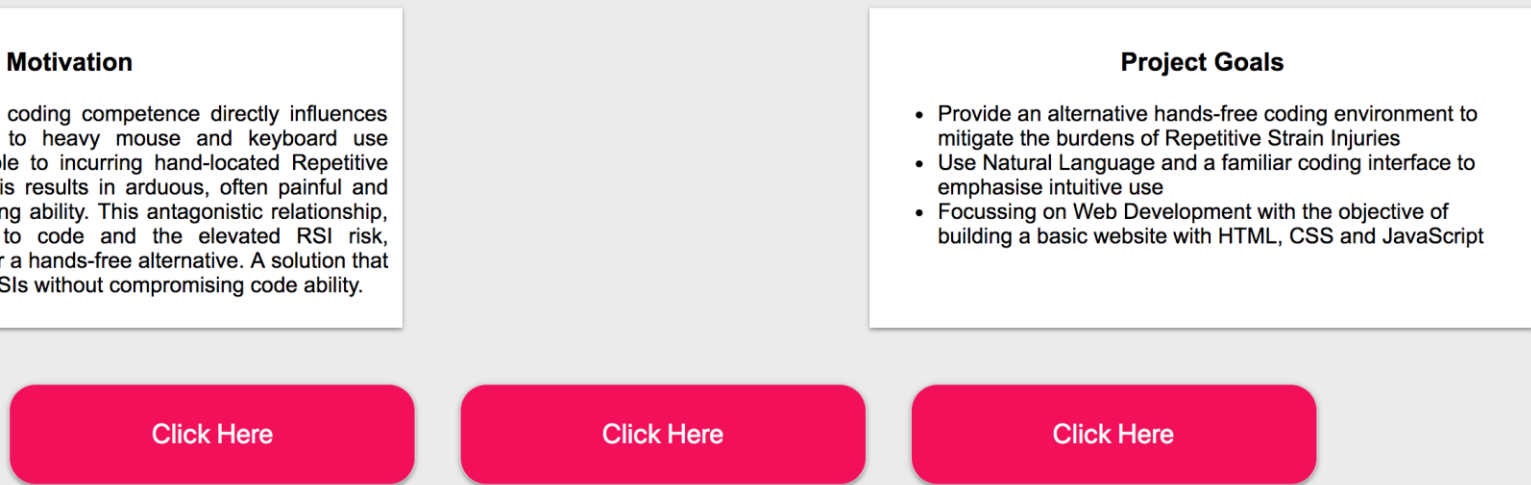
- Create a function
- Create click, mouse over, and other event listeners
- Change text on event
- Change style on event
- Add or remove classes



Example

A website build entirely with voice commands

Code Speech Interface



Developed by Fraser McIntosh and Max Griffith

Conclusions

- Developed a tool that can be used to create a website using natural voice commands
- Command variations handled easily
- Speech recognition needs improvement
- Does not replace all functionality that a developer needs – proof of concept

Future Work

- Improve speech recognition model to recognize coding jargon
- More language features – more elements, styles and functions
- Mobile coding– use a phone as the speech recognizer and display, generate code using the CSI back end

Help

“Open help”

Speech programming is a new concept for many people. Users have different expectations of what the interface can do and what functionality is supported. Prompts in the app help guide the user.

Preview

“Open preview”

Creating a website is a very visual process. It is important that programmers can get feedback that the code they are creating is having the desired outcome. With CSI, users can preview their creation at any time.

