1. Design and implement a Vocal User Interface (VUI) to allow students to program by GUI-based IPEs by voice.

2. Design and implement a tool to create VUIs dynamically rather than manually.

**BACKGROUND**

- Many K-12 initial programming environments (IPEs) are block-based requiring enough dexterity to use the mouse and keyboard.
- How to allow students with motor impairments to use the same software?

**RESEARCH GOALS**

1. Design and implement a Vocal User Interface (VUI) to allow students to program by GUI-based IPEs by voice.
2. Design and implement a tool to create VUIs dynamically rather than manually.

**USER STUDIES**

During the Spring of 2013, three clients of United Cerebral Palsy reviewed Myna and offered suggestions to improve the tool.

- **Client 1**: Cerebral Palsy, severe impairment
  - Used laptop to communicate
  - Able to test and really liked Myna

- **Client 2**: Cerebral palsy, limited communication
  - Limited vocal ability prevented use but liked idea

- **Client 3**: Quadriplegic
  - Able to test and really liked Myna

In April 2013, a pilot study was conducted with five CS graduate students. The participants each completed three programs with the mouse/keyboard and with Myna (voice). Testing showed that there is no significant difference in time (average of 13 seconds difference) between either modality.

**FUTURE WORK**

- To semi-automate the process of collecting the metadata for the components on the screen, a tool is being developed and will be completed Spring 2014.
- Then, a Domain Specific Language will be developed to implement the incorporation of the component data with the Myna behavior.
- Evaluations of this tool will occur during the Summer of 2014.
- Additional user studies will be conducted throughout Spring and Summer 2014.