Design Review 1

Team SciKids

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Problem

- Market for STEM
- Sponsor Interest
- Increase sponsor reach
- Informative content

Solution

- Gesture-based learning system
  - Recognizes and detects gestures
  - Create a series of modules
  - Provides information of STEM fields
  - Gain interest and supports choice in STEM field
  - Goal: to increase interest and provide support
- Hardware:
  - Intel RealSense
- Backend & GUI
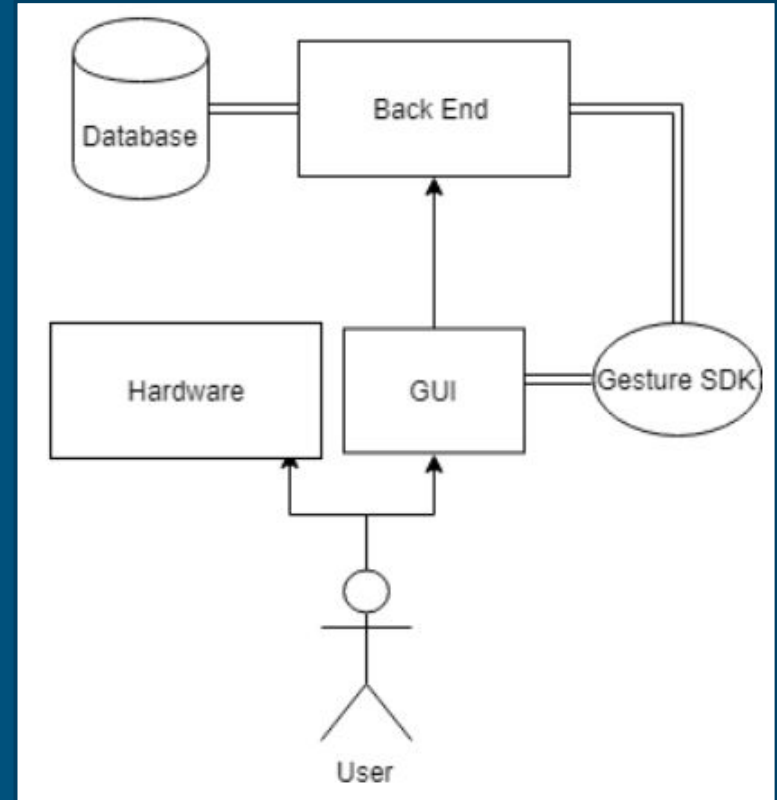 - Unity with C#
- Database
  - MySQL

Figure 1

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Requirements Acquisitions

- Sponsor meetings
- Open communication with sponsor through email and text.
- Flowcharts of system

Functional Requirements

Product will be a framework for module-based content. This entails:

- Shall provide an extensible, **module-based content** deployment framework
- Will store user information in a **database**
- Must detect both **gestures** and mouse clicks as event triggers
- **GUI** must be present for the users to interact with as a means to navigate the system

Functional Requirements (continued)

Extensible, module-based content delivery system

- User will have the ability to access content from different modules
- Must have an adaptable workflow
- Must contain a specific drop of place for work

Nonfunctional Requirements

- Portability
  - Efforts required to **physically** move the software from place to place
- Extensibility
  - Efforts to make **changes** to the software should be clear
- Security
  - Data stored should be **protected** and only accessible to owner of profile
- Emotional factor
  - System must be entertaining and visually appealing to users.
- Accessibility
  - System must accessible with individuals with impairments.

Nonfunctional (continued)

Emotional factor - gamification

- Module 1: K-5
  - Low-level content introducing STEM
  - Focus on problem solving
- Module 2: 6-12
  - More specific content (biology, engineering, etc.)
- Module 3: Community and College
 - Content based off of the NACE guidelines

Risks and Challenges

- Learning curve for students
  - Must memorize gestures rather than recognize symbols
  - Solution: a short tutorial
- Accuracy issues
  - Must filter through background noise
  - Solution: Recommend a certain distance for the user to stand away from the camera.
- User Fatigue
  - Long exposure may lead to muscle fatigue
  - Solution: Have a time limit to how long each game is

Schedule

Using: https://www.teamgantt.com/
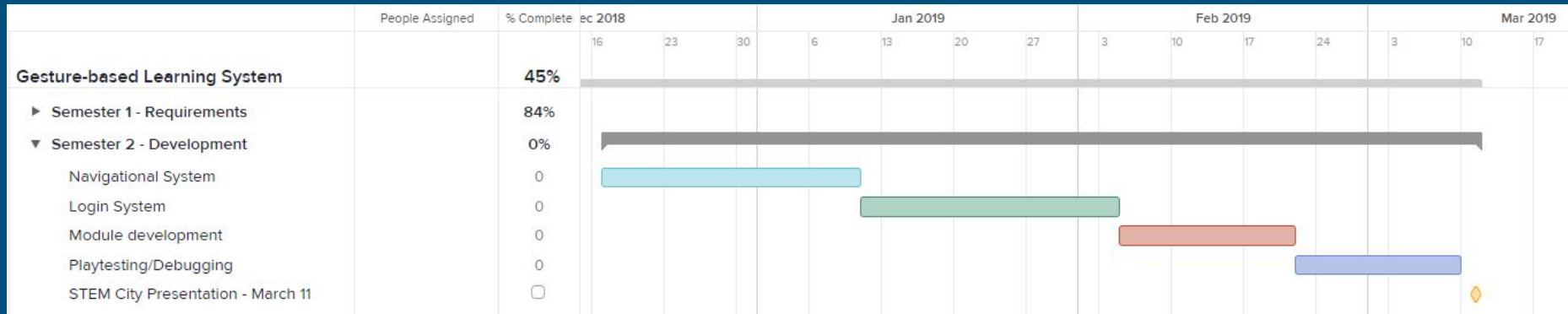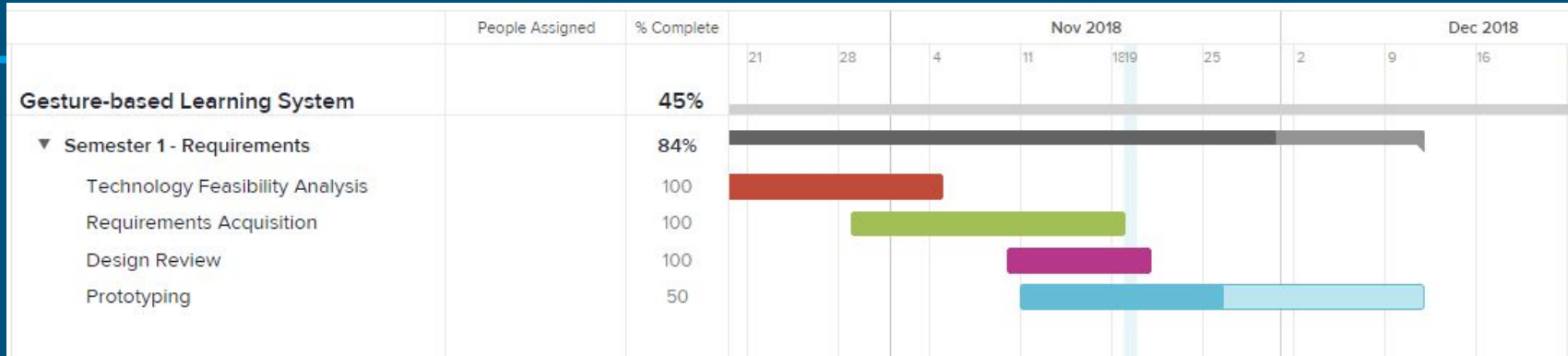
Conclusion

- Team SciKids, working with Elizabeth Glass
- Gesture-based learning system
- A module-based framework with database and gamification elements.
- Targets K-12, college, and community
- Risks:
  - Learning curve, camera accuracy, user fatigue
- This project will continue on after us.