Skeletal Age Calculator Project Documentation

Connor Moorman Brian Knotts Brantlyn Decker Brett Worley
Kristen Schwaiger Kyle Wood Cole Stuby

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1 Introduction

This project involves porting over a previously written program into a portable language. The user's main need for the project is to update and port over a previously written program to a modern system independent language.

1.1 Requirements

The basic requirements of the program are as follows.

1. The program must provide the same functionality as the previous program.
2. The program must be system independent.
3. The program must be validated against the test cases for the previous program.
4. The program will provide an easy to use UI, it shall follow the format of the forms that the users are accustomed to.
5. The program should be extensible.

2 Objectives

2.1 Introduction

The first part of the project should be porting over the previous code into a portable language and develop a mock up of the UI. The UI should follow the format of the medical forms that are given alongside of the previous code. The new program should also be able to read in the data-set of measurements, instead of being hard-coded like the previous. The program also needs to be extensible, allowing ease of adding additional features or different possible medical methods. This could be done either the use of a plug-in system or easy to integrate with code.

The next steps of the project would be making the UI more user friendly. The general ideas around this is possibly separating the forms into different tab groups, adding additional help sections for users that are learning the methods, a simple beginning form that asks a few basic questions and then chooses the correct form for the user.

2.2 Project Goals

The main goals of the project are as follows.

- Port over the previous code to a modern portable language.
- Allow the program to read in the measurement data instead of having it hard-coded into the program.
- Design a simple UI for user interaction (the UI should closely follow the forms that they are used to filling out).

Additional goals would be to improve the functionality and the user experience of the program. Some of the discussed examples are as follows.

- Making a tutorial/help system for newer users still learning the program and/or methods for the measurements.
- Separate the different forms into their own tab groups.
- Allow for the different types and forms for bone measurements.
- Design graphs to show the data in a more understandable format.

3 Scheduling

3.1 Preliminary Schedule

The current schedule is shown in the following list, it is currently generous for the GUI and program design phase. For the improvements topic, see the section about the work breakdown for the project. The target date for a stable demo is March 21. The finished product date is April 18. Documentation should be done throughout the project.

- GUI and program design - 2 weeks.
- GUI prototype - 1 week.
- Program implementation - 4 weeks.
- Testing - 1-2 weeks.
- Improvements - 3-4 weeks.

3.2 Milestones

The following list contains the basic milestones for this project. They are in the order to be done as work on the project begins and progresses.

1. GUI prototype designed and implemented.
2. Stable build implementing the functions of the program that is being ported over.
3. Validated program that gives the same results as the previous version.

3.3 Work breakdown

The work for this project can be broken into the following pieces shown in the list. The section about improvements to the program are extra ideas for help sections, easier usability (better new user experience), or implementing the proposed improved formulas to the FELS method.

- Documentation
    1. Project Requirements
    2. Project Design
    3. Documentation of the project as it progresses
    4. Program documentation / API manual
       To be used to help extend the possible functionality of the program after the stable release.
    5. User manual
    6. Help sections design
- Implementation
    1. GUI implementation conforms to the mock-up of the forms currently being used in the medical field.
    2. Independent modules to support an extensible program.
    3. Build target is a jar file able to locate the files it needs for data, or is passed the locations of the files when executed.

- Testing
    1. Ensure the previous program that we are porting over from is working correctly.
    2. Validate the new program against the older one.
    3. Through test the GUI
    4. Test the file format that is being designed to hold the patient data.
- Improvements
    1. Add help sections
    2. Possible use of pictures to help new user experience or to help with users that are also new to the FELS method.
    3. Implement the proposed improved formulas to the FELS method.
    4. Form deciding startup section (asks some basic questions and chooses the best suited form).