Capstone Status Report for Week 4

Noah Buchanan (Team 2)

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1 Team Members

My team includes the following members:

1. Sasha Lawson
2. Alana Matheny
3. Sam Donaldson
4. Noah Buchanan

2 Goals from Previous Week

The following goals were set in the previous weekly report:

1. **Task 1**: Help the team to create our interfaces(actual code, not mock-ups).
2. **Task 2**: Research which metrics will be best for analyzing our key-points performance and what loss function to utilize for this task.

3 Completion of Tasks Planned

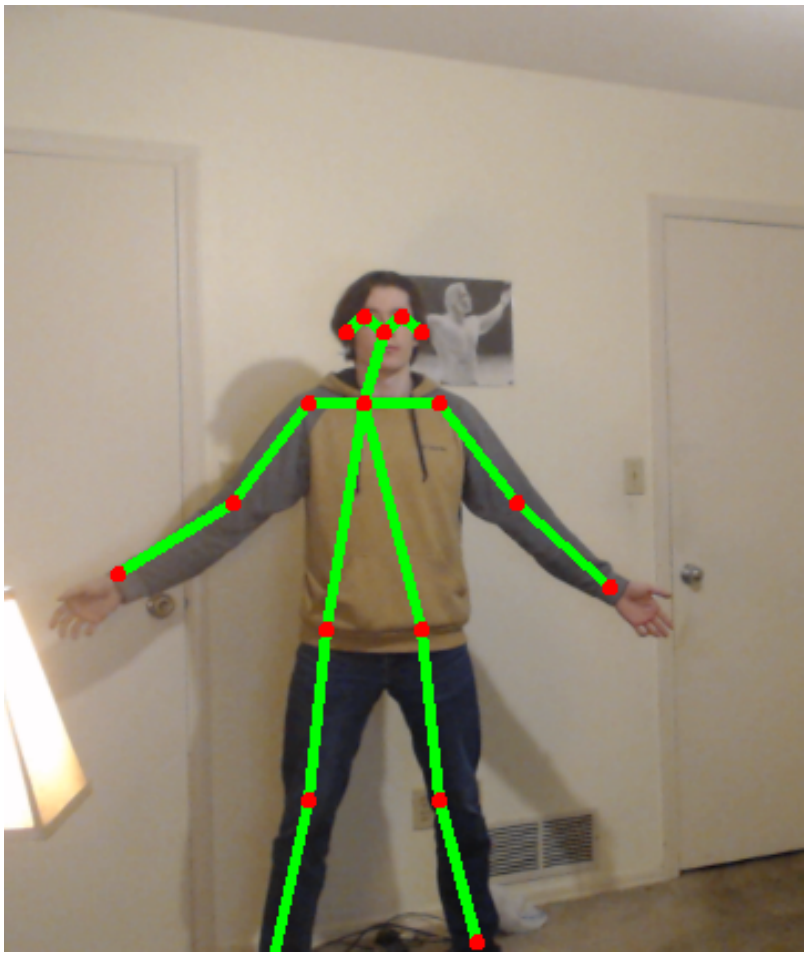
The following work has been accomplished with respect to my previously set goals:

Task 1: Interfaces

This task was delayed because of other work causing time constraints.

Task 2: Keypoint metrics and Model Preliminaries

More was completed of this task than expected. The search for a best metric to determine a key-points validity is still underway but we put together a preliminary wire-frame model using a pre-trained model to give us a starting point.



The code will be included in the submission point of this status report.

Task 3: capstone.cs.uafs.edu page

Team 2 Overview

Team Members

Our team was comprised of the following members:

- Noah Buchanan
- Sam Donaldson
- Sasha Lawson

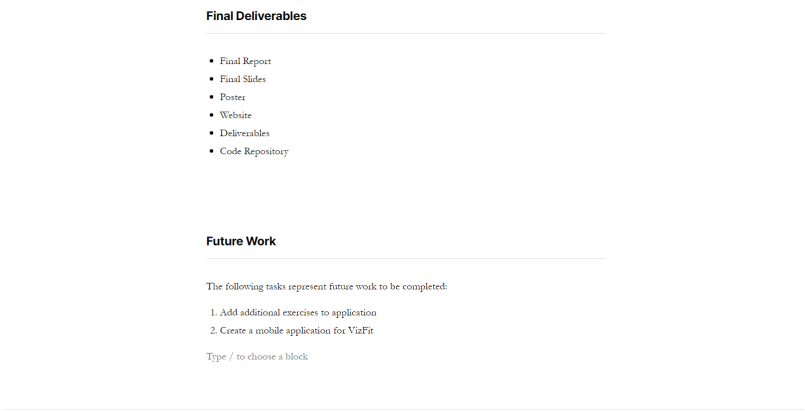
Project Overview

This project sets out to solve the following problems: Lack of an insightful fitness break-down, inconsistency in maintaining a fitness routine, and the difficulty in properly exercising due to improper technique or a lack of general fitness knowledge. We propose the following solutions to each respective problem: First, by utilizing personalized user analytics that we aggregate over time we will provide insightful information about a user's personalized fitness journey. Second, providing an at-home substitution to going to the gym will allow for a better incentive to users in-order to maintain fitness consistency. Finally, to decrease the difficultly of properly exercising we will implement computer vision and machine learning concepts to determine the accuracy of a given fitness activity and maintain useful statistics such as rest times between exercises.

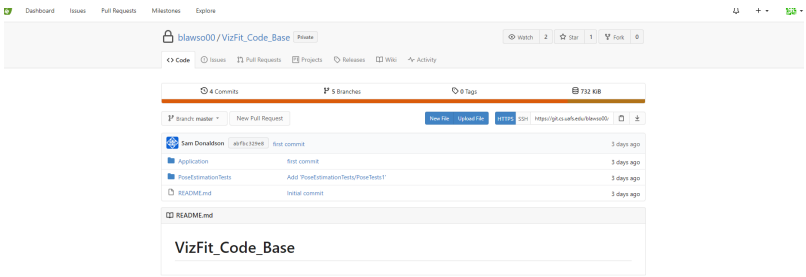
Our goal, on a much broader scope, is to make fitness easier. This will be accomplished through various functions such as computer vision and machine learning models, a front-end webpage which will provide personalized data and feedback, a database, and an API to move data amongst these entities. Our deliverables will include the Project Proposal, User Interface Design Graphics, Database Schema and Data, Deep Learning Model Code, Webpage Application Development Code, API Development Code, and the Final Report.

Task Schedule

Tasks	Dates	Assigned to	Status
1. Create, Revise, and Finish Proposal	01/10 - 01/22	Noah Buchanan, Sam Donaldson, Sasha Lawson, and Alana Matheny	Complete
2. Research and Find Good Exercise Datasets	1/17 - 1/30	Noah Buchanan, Sam Donaldson, Sasha Lawson, and Alana Matheny	Complete
3. Implement Code for Initial Dashboard Webpage Design	1/24 - 1/30	Noah Buchanan, Sam Donaldson, Sasha Lawson, and Alana Matheny	Incomplete
4. Implement Code for Initial Machine Learning Application GUI	1/24 - 1/30	Noah Buchanan, Sam Donaldson, Sasha Lawson, and Alana Matheny	Incomplete
5. Setup and Configure Database	1/24 - 1/30	Noah Buchanan, Sam Donaldson, Sasha Lawson, and Alana Matheny	Incomplete
6. Create and Implement Database Schema	1/24 - 1/30	Noah Buchanan, Sam Donaldson, Sasha Lawson, and Alana Matheny	Incomplete
7. Implement Wireframe Manipulation	1/31 - 2/6	Noah Buchanan, Sam Donaldson, Sasha Lawson, and Alana Matheny	Incomplete
8. Create First Neural Network Model	1/31 - 2/6	Noah Buchanan, Sam Donaldson, Sasha Lawson, and Alana Matheny	Incomplete



Task 4: Gitea repository



4 Additional Work Completed

In addition to the goals set for the previous project, I also completed the following work:

1. Helped Alana briefly in the task of putting our info on the website given to us.

5 Overall Group Dynamics

We used both class sessions this week to meet and work as a team. In addition, we also scheduled an additional meeting on Sunday at 2pm to explain the preliminary work on the wire-frame and delegating tasks for the week as well as meeting on Wednesday at 6pm to discuss our next steps in the coming week. All members were in attendance. We are all making excellent progress.

6 Goals for This Week

The following goals and tasks are planned to be completed by our next status report:

1. **Task 1**: Familiarize myself with Vue.js and Vuetify.
2. **Task 2**: Research which metrics will be best for analyzing our key-points performance and what loss function to utilize for this task.
3. **Task 3**: Search for other wire-frame models to find the best for our task and familiarize ourselves with the methods of that model to determine what we can tweak for best performance.