### Smarthinking Tutor Response Form

Your tutor has written overview comments about your essay in the form below. Your tutor has also embedded comments **[in bold and in brackets]** within your essay. Thank you for choosing Smarthinking to help you improve your writing!

Welcome back Minnie! I am Jonathan V., and I look forward to working with you on this **Grammar and Referencing Review** for your project idea about improving postureto improve your writing today. Let's get started!

**\*Writing Strength:**

Sentences include commas effectively to add structure, like the introductory element here:

In addition, there is a feature enabled for quick posture checks or a couple of times a day than keeping it on all the time (Natasha Lomas 2022).

Adding the comma after “in addition” clearly shows where the introductory element ends. This structures the sentence well so that the readers would understand the parts easily. Nice!

**Sentence Structure:**

Active voice sentences are shorter and easier to read because the subject and verb work together. By using the long passive verb, you end up with a long sentence where you separate the subject and verb. Here is a passive voice sentence from your essay:

Data Structures such as ‘arrays, linked lists, stacks, queues, trees, graphs, sets, hash tables’ are supported by most of the top tier programming languages (Full Scale 2019).

This sentence is in the passive voice because the subject that supports the data structures is after the long verb, “are supported.” To change this, identify the subject in the sentence that can move before the verb. What subject can you identify in the sentence that would support the data structures? To help you make this change, consider how this active sentence becomes passive:

* Passive: Users would be allowed to check their postures by using the program.
* Active: The program would allow users to check their postures.

Identifying and moving the subject before the verb allows for using the active verb. Where can you apply this to your passive sentences to make them active? For more information, Smarthinking has a great lesson about active and passive voice, Chapter 6: Lesson 7.

**Word Choice:**

The sentences would become easier to read by identifying and avoiding typing errors where words do not fit the contexts of the sentences. Here is a sentence where the meaning of a word does not fit its place in the sentence:

MediaPipe supports many project ideas like hand detection, facial detention, face mesh, hair segmentation, object detection, and pose (Mediapipe).

This sentence contains a typing error as the word, “detention,” does not fit the meaning of the sentence. The word, “detention,” to indicates holding someone against their will, such as a punishment. For this sentence, it would fit better to use a word that involves identifying something that would only be a few letters different. What word did you now rather mean to type in this sentence? To improve the spelling in other sentences, focus on proofreading the essay carefully. A useful tip that would help with this to read the essay aloud, either to yourself or another person. This helps with going over each sentence carefully while being able to listen to how sentences sound, which can make it easier to identify whether words fit. Where else can you now avoid typing errors by checking whether words fit the sentences?

**Referencing:**

Consistency with the reference system, especially with in-text citations, would help make the references easier to understand. The in-text references sometimes become difficult to understand as they lack consistency, like in this sentence:

This poor posture in children is related to discomfort, and that most children adopt an unacceptable posture when working on computers (Breen R, Pyper S, Rusk Y and Dockrell S 2007).

The reference for Breen et al. (2007) is not consistent with other references for several reasons. For instance, Minnie, it is not clear why this reference is including initials for the authors’ first names when other references use only the authors’ last names. This reference is also naming all four authors when an earlier reference uses “et al.” to indicate multiple authors. However, it is difficult to provide specific advice for how to make the references consistent as the essay does not identify or clearly follow a single referencing system. What referencing system should you use for this essay? If you are not sure, then it is important to ask your instructor about what system he or she wants you to use. Once you are sure of the system, you should change details in your citations to follow this system. What can you change to follow a consistent referencing system? Smarthinking has several guides on some of the more popular referencing systems in the appendix of the Writer’s Handbook linked at the end of this response form.

**Summary of Next Steps:**

* Identify subjects to help change passive voice into active voice.
* Proofread carefully to make sure words fit the sentences.
* Adjust the references to be consistent and follow a single referencing style.

Thank you for submitting your project idea about improving posture for a review, Minnie. I enjoyed helping you with this step in the revision process. Have a good day!  
Jonathan V.

You can find more information about writing, grammar, and usage in the [Smarthinking Writer's Handbook for Australia, NewZealand, and UK](https://services.smarthinking.com/static/document_library/docs/career/Smarthinking_Writers_Handbook-for-Australia-NewZealand-and-UK.pdf" \t "_blank).

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Please look for comments **[in bold and in brackets]** in your essay below.  
Thank you for submitting your work to Smarthinking! We hope to see you again soon.

**Project Idea**

*You all have some project ideas that you reported in Assignment 1. You are to produce a project idea for the group as a whole, which could be an individual’s idea, but is more likely to be a combination of each of the ideas you had individually (an entirely new IT (Information Technology) Project Idea proposal), together with comments and feedback from your Assignment 1 marker, instructor, and anyone else who you would like to consult.*

*You may also wish to consider what problems need to be solved, for which there are many sources of information, such as the ones below. There are many more websites like these, of course.*

*There is no set length for this section, but it is difficult to see how a description of less than 1500 words would be adequate. Do not limit yourself to this if you have more than this to write, though - but it should be in a professionally written and concise format.*

*Expand the Overview, Motivation, Description, Tools + Tech, Skills, Outcome items from Assignment 1. Adapt it using the feedback received and the developments/suggestions from your group members. Put weight behind innovative components and ensure the project is feasible [no sci-fi / pie-in-the-sky] to make steps beyond a simple proposal/plan. Perhaps look towards identifying niche/markets/needs, and the more detailed mechanics of the project.*

*Note: There are to be significant tangible artifacts towards the project completion that are delivered by the submission of ASSIGNMENT 3, so keep this in mind when brainstorming your IT Project Idea for Assignment 2 – Feasibility is a key factor.*

*Project Idea – Niroshini’s Original writing from A1 for reference*

Overview – Yumna

Do you desire good posture and a healthy spine? Extended periods of looking down and working from electronic devices can result in musculoskeletal problems. In our project, we are developing software that alerts users to bad postures using a secure webcam. When you slouch, the application sends you notifications in red and blue to notify user to correct their posture.

**What is the significance of good posture?**

Proper posture also reduces stress on your ligaments and muscles, lowering your risk of injury. **[This start to the discussion of significance is strange, Minnie, with how it uses the word, “also.” It does not make sense to start with “also” as it means that the discussion of significance already started earlier. How can you start by rather just indicating how posture is significant?]**  It also allows us to stand, walk, sit, and lie in positions that put the least strain on supporting muscles. We specifically aim to provide good posture awareness to those suffering from musculoskeletal issues such as neck and back pain, injuries and strains, sprains, and strains. Irrespective of whether you exercise or treat the underlying cause of your pain, it is essential that you maintain proper posture throughout your tasks. We use higher skills and technology to achieve the user goals to achieve this idea.

Everyone should adopt a positive posture.

**Features:**

* Detects poor postures using your webcam.
* No internet connection is required.
* Guidelines for Posture Correction
* Displays a history of the number of hours spent on an electronic device.
* Alerts for message pop-ups / with sound
* There will be no recording or storing of visuals.

Motivation - Tessa

The motivation behind this project lies with the ongoing stress of posturing while using technology. It has been proven that upper extremity musculoskeletal symptoms occur in the population due to computer use (Eltayeb et al. 2007). To combat this, this application will focus on correcting this posture for men, women, and children alike. There is a major concern for women in particular, whose muscles are more strained than men’s’ (Gustafsson 2010). As well as this, using the technology to help children create better habits is also a motivator. This poor posture in children is related to discomfort, and that most children adopt an unacceptable posture when working on computers (Breen R, Pyper S, Rusk Y and Dockrell S 2007). In building this webcam-based posture correcting tech, the aim is to help workers and students from hunching over their desks and preventing bad posture.

Description – Travis & Niroshini (533 words)

Posture mirroring desktop application mirrors the posture and gently sends alerts when workers hunch over and lean over desks while working. The posture correction feature, which accesses individuals' cameras, does not run on the cloud, meaning no one can access data, including visuals. It uses the webcam to monitor the user's posture without storing or recording any visuals. So, the user needs to be comfortable with software watching through the lens while working.

It uses two data points that employers signed up to use the tool and how many hours of sitting in front of the screen. This software component runs offline, uses AI, and processes data locally on the device without an internet connection. So, the data, like photos or videos, cannot be passed to the cloud. That is the only way employers could spy on employees. Storing and recording the visuals and spying on people is impossible for employers or us as the software only receives the complete company information on how many employees sign up for the app and how many use it weekly, not the personal information. With this data, employers can see how many employees engage with this application. Once collected and stored, it can be saved as a profile and selected to start running once the user is seated.

The application can be run non-stop, continuously monitoring posture and alerting the user of any changes in posture, or an option to do a "quick check" can be utilised to get a snapshot of how the user is sitting and give feedback on the current posture. Utilising the "quick check" would be preferable for users who need more memory and CPU for their work, as running the application will use many of those resources. (Natasha Lomas 2022) **[The reference for Lomas (2022) is not clearly part of the sentence as the full stop after “resources” ends the sentence. This puts the reference as the start of a new, incomplete sentence. Where can you move the full stop so that the reference is part of the sentence?]**

This posture-detecting application can be used with other webcam-utilising applications such as Microsoft teams or zoom. This software application will run in the background concurrently whilst using other apps and display an animation of a stick figure man in the menu bar, which allows users to keep alert without being interrupted by awake messages. The stick figure will either show upright and coloured blue, meaning posture is good, or the display will be that of a bent-over stick figure in red, signalling that the user must correct their posture. Regardless, it never sends pop-up message alerts. There are options for how it wants to be alerted to the user. The user will need to manually set their upright posture on positioning up. Then the app uses that to build a user-specific mathematical model that records key posture points such as joints, nose, ears, etc. The AI can detect posture differences in real time when the camera monitoring is enabled and decide whether the person is slouching. These posture points are fed to a mathematical model that compares the current position to the original baseline position set as the user's upright position. Moreover, the software applies geometrical formulas to vectors built by the current posture position and the original baseline upright posture position to determine if the person is slouching. In addition, there is a feature enabled for quick posture checks or a couple of times a day than keeping it on all the time (Natasha Lomas 2022).

Tools and Technologies – Minnie (222 words)

The posture correct app will primarily use Media Pipe and OpenCV on Python.

Firstly, Python is an interpreted, object-oriented, high-level programming language and versatile tool for developing websites, software, task automation, data analysis, data visualization, and Machine Learning (Python Software Foundation 2019).

It works on different operating systems, such as Windows, iOS, Linux, and Raspberry Pi, and has a simple syntax, which allows developers to write fewer lines than other programming languages.

Our project requires Machine Learning with Artificial Intelligence, accessibility of webcam, stability, flexibility, and simplicity.

Python has large libraries, compatible with different devices and operating systems, and is easy to write and read (GeeksforGeeks 2021).

Secondly, MediaPipe is a software library that works on Python and is similar to TensorFlow (GeeksforGeeks 2021). MediaPipe supports many project ideas like hand detection, facial detention, face mesh, hair segmentation, object detection, and pose (Mediapipe). It has in-depth documentation on lots of different programming languages like swift, C++, Python, and Java (GeeksforGeeks 2021).

MediaPipe offers many services that we mentioned earlier. It is a Machine Learning solution for high-fidelity body pose tracking, inferring 33 3D landmarks and background segmentation masks on the whole body from RGB video frames utilizing BlazePose research (Mediapipe).

Lastly, our project will use OpenCV. It is a great tool for image processing and performing computer vision tasks (OpenCV).

In the virtual environment, OpenCV is to get the webcam input and we will use Media Pipe’s algorithm in Python.

Skills Required – Matthew (293 words)

By utilizing the tools and technologies such as OpenCV and Mediapipe, there are several advanced skills required to create a strong project. Some areas include:

‘Knowledge in data structures’: Data Structures consist of data that has multitude of functions, operations, relationships, and data values that can be added to it. Data Structures such as ‘arrays, linked lists, stacks, queues, trees, graphs, sets, hash tables’ are supported by most of the top tier programming languages (Full Scale 2019).

‘Basic knowledge in image processing’: A basic understanding of importing digital images for analysis and alteration. Processing fundamentals also will be beneficial which will contain ‘edge detection, colour conversion, applying filters and other relevant aspects’ (Full Scale 2019).

‘Electronics’ (Full Scale 2019): Our project will make use of the webcam; it will be important to understand how to set up and operate this hardware device to develop the project.

There are several programming languages that are necessary when it comes to creating applications with OpenCV and Mediapipe such as Java, Python, JavaScript, C/C++, C#, and MATLAB. Having at least a basic knowledge of these languages will be vital to creating our project as both OpenCV and Mediapipe require coding with the use of these languages. OpenCV states that it ‘is natively written in C++’ and it also has interfaces in ‘C++, Python and MATLAB (OpenCV 2022). Mediapipe on the other hand has sixteen prebuilt solutions ‘in C++, Python, JavaScript’ (Kukil 2022).

Many of these Skills will require an advanced level of understanding to be able to fully develop our project, though with an often-overlooked skill of internet research, and the availability of information we are poised to be able to gain at least a basic understanding of these tools and the languages that goes with them.

Outcome - Yumna

Musculoskeletal problems, muscle cramps and headaches are the most common complaints among computer workers, but there are methods for preventing them. Following the guidelines of our artificial intelligence-powered Posture Mirroring software can result in significant long-term health improvements in the lives of users and consist of both physical and mental benefits.

* Enhancing energy levels throughout the day.
* Accelerate consumers flexibility progress.
* Reduced risk of injury.
* Inspection of poor body posture.
* Improved mood and Sleep.
* Eliminate muscle stiffness.
* Healthy spine.

Regularly sessions help with posture awareness and behaviour modification. Alternatively, consumers will notice slouching and will naturally surrender to an upright posture and, the consumers become more aware of their muscles activity, making it easier to correct their own posture. **[In the previous sentence, the activity belongs to the muscles. Adding something to show possession, like “program’s guidelines,” would help readers understand the meaning of the sentence. Where can you add an apostrophe to show the activity belongs to the muscles?]** There is no need mandatory to keep it on all day. Instead, using the 30-minute feature twice a day for seven days would generate outstanding results regarding improved posture knowledge and understanding and decreased Musculoskeletal problems.

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