

Poster : AI Driven Work From Home Assistant

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AI Driven Work From Home Assistant

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AIM & OBJECTIVES

This research aims to Develop a software that helps and assists in a work-from-home environment and enhances the user experience and productivity.

The objectives are :

- 1)To conduct a thorough literature review about the Work from home environment and the existing assistance systems.
- 2)To critically analyse the functionalities like posture monitoring , background noise suppression and distraction monitoring that are to be added to achieve the aim.
- 3)To develop the system using appropriate methods and tools.
- 4)To Evaluate the system by comparing the current existing tools with the developed tools.
- 5)To provide future potential upgradations in this system.

BACKGROUND/RATIONALE

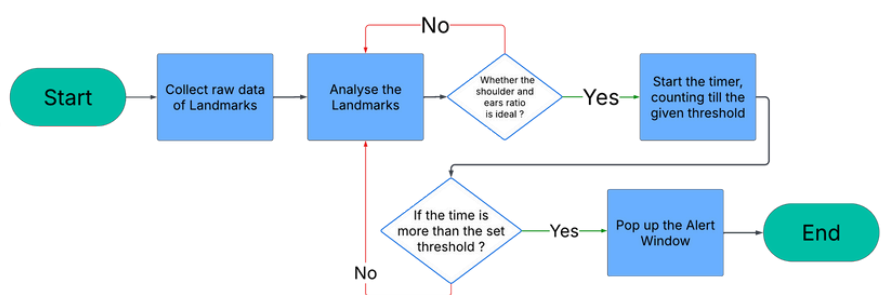
Though existing technologies help a lot in the remote working environment but there are certain gaps or shortcomings that it can not fulfil. The technologies are purely focused on managerial perspective or connecting people through chatting platforms or video conferencing but there are no major softwares or applications that takes the problems of Body Posture , Distraction and Background Noise in account of the professional while working from home. Butte, K.T. et al. (2023) states that working remotely can lead to bad posture and lower back pain (LBP) due to increased sitting duration and less suitable ergonomics. It was discovered that greater indoor noise disturbance during the pandemic era led to higher degrees of noise annoyance, implying that the degree of noise disruption is closely linked to persons' experience of noise annoyance, which can impair their job satisfaction (Park, Shin and Kim, 2023). Luebstorf et al. (2023) addresses the issue of the background noises by stating that people were having difficulty maintaining focused and being distracted by their pets, neighbours, or background noises. In some situations, background noises were created by employees' families, resulting in having issues communicating with coworkers owing to missing social cues, a lack of fast response, and less flexibility contributed to videoconferences feeling less natural.

METHODOLOGY

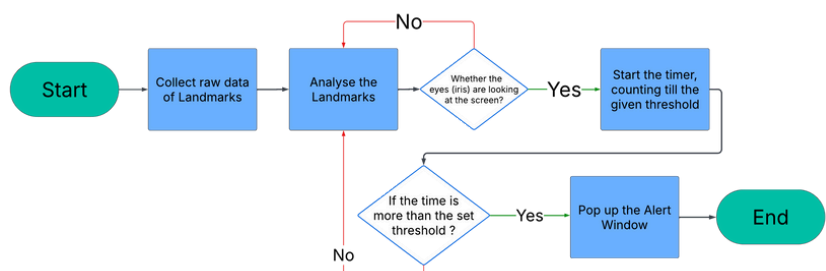
For development pythoni language is used for coding and multiple python libraries are utilised for the functionality of the features.The libraries used are as below :

- OpenCV (cv2) - Face Detection,Obj Tracking, Cam Capture
- Mediapipe - Face , Hand and Pose Detection in Real time
- Ctypes - For alert pop-ups
- Time - Measure the time taken for an activity
- Librosa - Background noise suppression
- Soundfile - Importing and Exporting the music file

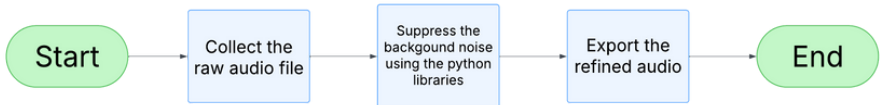
POSTURE RECOGNITION WORKING



DISTRACTION TRACKING WORKING



BACKGROUND NOISE SUPPRESSION WORKING



RESEARCH OUTCOME

Below is the quantative analysed data of comparision of the projects system vs the existing assistign technology :
The data is how many functionalities is better from the existing technologies from 3 fucntionalities.

Metrics	Project System	Existing Systems
Accuracy	1/3 ✗	2/3 ✓
Latency(Speed)	3/3 ✓	0/3 ✗
Security	Equal ✓	Equal ✓
Memory Usage	3/3 ✓	0/3 ✗
Coding Practices	2/0 ✓	1/3 ✗

CONCLUSION

In conclusion, this report not only discusses thoroughly through the detailed literature review about the problems faced by the individuals that are working from home but also gives an intact solution for it. The aim and objectives that were set to achieve was completely fulfilled. A system has been introduced with all the relevant features passing through any and all tests and experiments conducted on it. Hence a possible , probable and plausible solution is found for recognizing the correct posture , tracking the distraction and reducing the background noise

ETHICAL CONSIDERATION

This projects follows the code of conduct of an esteemed professional learned society called “British Computer Society” and it follows the “Code of Conduct”. Furthermore this projects does not involve any direct or indirect contact with human participants. No sensitive or personal information is gathered or collected for any research or analysis purposes and it does not involve any risk of compromising confidentiality or anonymity.

REFERENCES

- Butte, K.T., Cannavan, D., Hossler, J. et al. (2023) ‘The relationship between objectively measured sitting time, posture, and low back pain in sedentary employees during COVID-19’, Sport Science and Health, 19, pp. 259–266. Available at:<https://doi.org/10.1007/s11332-022-01031-x>.
- Park, S.H., Shin, H-K. and Kim, K-W. (2023) Relationship between indoor noise perception and remote work during the COVID-19 pandemic. PLOS ONE, 18(6), e0286481. <https://doi.org/10.1371/journal.pone.0286481>
- Luebstorf, S., Allen, J.A., Eden, E., Kramer, W.S., Reiter-Palmon, R. and Lehmann-Willenbrock, N. (2023) Digging into “Zoom Fatigue”: A Qualitative Exploration of Remote Work Challenges and Virtual Meeting Stressors. Merits, 3(1), pp. 151–166. <https://doi.org/10.3390/merits3010010>.