

CLAIMS

1. A computer implemented method for predicting latent bio-signals, the computer implemented method comprising:
 - receiving, by one or more processors, a first bio-signal of an individual user;
 - analyzing, by the one or more processors, the first bio-signal;
 - predicting, by one or more processors, at least one latent bio-signal based on the analysis of the first bio-signal; and
 - sending, by one or more processors, the latent bio-signal to an electronic device.
2. The computer-implemented method of claim 1, wherein the prediction of the first-bio signal is based on a personalized probabilistic clustering model.
3. The computer-implemented method of claim 2, further comprising:
 - receiving, by the one or more processors, the individual's health data.
4. The computer-implemented method of claim 2, further comprising:
 - sending the first bio-signal and latent bio-signal to a centralized database for continuous training of the personalized probabilistic clustering model.
5. The computer-implemented method of claim 2, wherein the personalized probabilistic clustering model is trained with historical data.
6. The computer-implemented method of claim 1, wherein the electronic device is a smart phone or smart watch.
7. The computer-implemented method of claim 1 wherein the first bio-signal of a user is at least one of the following, heartrate, cardiac cycle, respiration rate, and peripheral oxygen saturation.
8. A computer system for predicting a latent bio-signal from a bio-signal, the computer system comprising:
 - one or more computer processors;
 - one or more non-transitory computer readable storage media;
 - program instructions stored on the at least one or more non-transitory computer readable storage media for execution by at least one of the one or more computer processors, the program instructions comprising:
 - program instructions to receive a first bio-signal of an individual;
 - program instructions to analyze the first bio-signal;
 - program instructions to predict a latent bio-signal based on the analysis of the first bio-signal; and

program instructions to send the latent bio-signal to an electronic device.

9. The computer system of claim 8, wherein the prediction of the analysis of the first bio-signal is based on a personalized probabilistic clustering model.
10. The computer system of claim 9, further comprising:
program instructions to receive the individual's health data.
11. The computer system of claim 9 further comprising:
program instructions to send the first bio-signal and predicted latent bio-signal to a centralized database for continuous training of the personalized probabilistic clustering model.
12. The computer system of claim 9 wherein, the probabilistic clustering model is trained with historical data.
13. The computer system of claim 8 wherein, the electronic device of the user is a smart phone or smart watch.
14. The computer system of claim 8 wherein, the first bio-signal of a user is at least one of the following, heart rate, cardiac cycle, respiration rate, and peripheral oxygen saturation .
15. A computer program product for predicting a latent bio-signal from a bio-signal measured with a consumer grade health device, the computer program product comprising one or more computer readable storage media and program instructions sorted on the one or more computer readable storage media, the program instructions including instructions to:
receive a first bio-signal of an individual;
analyze the first bio-signal;
predict a latent bio-signal based on the analysis of the first bio-signal; and
send the latent bio-signal to an electronic device.
16. The computer program product of claim 15, wherein the prediction of the analysis of the first bio-signal is based on a personalized probabilistic clustering model.
17. The computer program product of claim 16, further comprising instructions to receive the individual's health data.

18. The computer program product of claim 17 further comprising instructions to send the first bio-signal and predicted latent bio-signal to a centralized database for continuous training of the personalized probabilistic clustering model.

19. The computer program product of claim 16 wherein, the probabilistic clustering model is trained with historical data.

20. The computer program product of claim 15 wherein, the electronic device of the user is a smart phone or smart watch.