

Suspect Inquisition. Reply to Suspect AI: Vibraimage, Emotion Recognition Technology, and Algorithmic Opacity

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Abstract: *This is the reply to the publication of James Wright - Suspect AI: Vibraimage, Emotion Recognition Technology, and Algorithmic Opacity.*

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Technical progress in 21 century gives possibilities for the development of the 3rd generation of biometric systems aiming identification of human emotions, behavior, intentions and thoughts. Modern biometrics started from 19 century by manual person identification of fingerprints and biological parameters (Lombroso, 1859; Henry, 1900) called the 1st generation of biometric systems (Polonnikov, 2014). In the end of the past century and now the automatic identification of a person by biological and behavior characteristics of human (the 2nd generation of biometric systems, by Pollonikov) are using worldwide in private and government applications (Beslay&Galbally, 2015). Of course, the opposition to biometric solution was presented in 19 and 20 centuries, but it could not stop science developments and the distribution of biometric solutions in the entire world.

Behavior and emotion detection is very popular in different applications now, so the opposition to this science direction is also great. Opposition to any new science direction and technology is usual process existing in any science from physics to psychology. Some people prefer to believe that Earth is flat, other people like to develop new theories against well known methods. I think that is possible to divide people on developers and inquisitors, it is standard task for the modern behavior detection science.

Currently vibraimage is one of the most famous behavioral detection technology, so it attracts attention of several groups of people. Let's consider the arguments of James Wright (Wright, 2020) against vibraimage technology and Minkin directly, maybe I will agree with some points and reply to others that looks important to me.

Vibraimage opacity

For me, such statement, placed in the title of the paper, is nonsense.

From vibraimage development start and the first patent publication in 2000 (Minkin&Shtam, 2000) was detail described every using algorithm so everybody can repeat testing by own software or using test modes of vibraimage programs. All vibraimage modes are presenting for free testing on Psymaker site (www.psymaker.com) and thousand users take it for own research. During last 20 years, I never heard that somebody received the other result than described in our works for the same testing. Of course many scientist received new results by vibraimage in own study. In this year was published next vibraimage monograph (Minkin, 2020) combined all algorithms using for processing behavior parameters, so now for researches is not necessary to study all works about vibraimage during 20 years, it is possible to take main knowledge from one latest book. Maybe James Wright did not read this book before writing his paper, but I repeat that there are no new algorithms in the last monograph, it only combines old calculation in one book and gives one approach to behavior analysis. Also last monograph presents the open access to the database of more than 10000 measurements of emotions (now updated database includes more than 15000 measurements) presented to database by different researches. So every scientist even with not large experience in statistics can test suggested results and provide own research.

In my understanding, vibraimage is one of most open IT technologies now. Of course, Elsys is private and commerce company and we want to have profits from our activity, so the prices to vibraimage products for security are high. However, we are presenting vibraimage systems to research and university teams on non-commerce condition because the directions of vibraimage applications are unlimited.

Vibraimage technology is not working as behavior and emotion detector

For me this claim is strange too, because firstly nobody knows what is emotion and behavior.

It is possible to say that some technology is not working if there are other standard working technologies in this field. Currently there are different approaches to the same aims (behavior analysis) by processing of different physiological and behavioral signals (Broek et al, 2010; Novak et al., 2012; Giannakakis et al., 2019) with less statistics and less practical application than vibraimage. Maybe some of such technologies have many publications in high level psychophysiological journals, but the technology results does not depend of publication place. In addition, I need to correct the link of Vibraimage publication on Springer given by James Wright with incorrect author name (Minkin&Nikolaenko, 2008). The most part of modern emotion researches Hinz (Hinz, 2002), Scherer (Scherer, 2005), Ekman (Ekman, 1999) notes that there are no one acceptable approach in emotion determination and behavior analysis. There are different approaches to emotion detection and only next study can confirm or reject suggested technologies. That

does not mean that is not necessary to develop behavior detection technologies. In Elsys team we are doing program updates every day, week, month etc. The aim of any researcher in this field is having more accuracy and possibilities in behavior analysis. I suggested the definition for emotions in the last monograph and we are working every day for study laws of behavioral detection.

Business shows that not working technology could not live and be developed for a long time. During past 20 years many companies and technologies declared great results in behavior detection. The most part of them is dead now. But others technology having physiological or physical base and correct algorithms are developing and showing good results on biosignals processing like EEG, ECG, HRV, HR, EMG, EDA, thermal imaging, facial expression (Giannakakis, 2019). Vibraimage technology measures head movements. Movements reflects behavior and physiology. Any behavior characteristic is informative, we are working to prove that head movements give more information content about person than other physiological characteristics. Maybe vibraimage is not so good for behavior analysis and Darwin was not right about informativity of reflex movements. But I does not know the other technology giving so much possibilities in behavior detection.

Vibraimage technology is working. Suspect AI.

This state looks as oxymoron.

Vibraimage technology is based on human ideas. The main concept was suggested by William James “That men are machines” (James, 1893) more than 100 years ago. The ideas of Heraclitus (Russell, 1972), Sechenov (Sechenov, 1965), Darwin (Darwin, 1872), Pavlov (Pavlov, 1951), Freud (Freud, 1900), Wiener (Wiener, 1948), Bernstein (Bernstein, 1967), Lorenz (Lorenz, 1963), Halberg (Halberg, 1987), Gardner (Gardner, 2007) were combined by me in different equations for measurement and processing of psychophysiological parameters, realized by the technical team. Artificial intelligence is necessary only for realization of human ideas, and see that AI is guilty is the same as to blame a hammer for hitting a finger.

Now we are working on Covid-19 detection. Do you think that AI is suspect if it helps to do covid-19 diagnostic by vibraimage processing with accuracy about 100%?

Only people ideas could be right, suspect or dangerous. Modern AI is only the realization of human ideas. Men are machines does not mean that machines are men!

Conclusion

The most part of current behavior detection technologies also as vibraimage are transparent for any checking and realize science approaches to investigated subjects. The most part of behavior analysis technologies also as vibraimage are measuring physical understandable values and measurements results are clear.

I agree with James Wright that we do not know how head movement is linked with emotion changes, also as any other physiological parameter like HR or EEG is linked with emotions. Vestibulo-emotional reflex is only the name linking physiological and emotional processes on human body. However, we do not say that we know it. Is not so necessary to know the process of it using. For user is necessary to know input and output interface for operation with the object, like black box in cybernetics. Isaak Newton did not know anything about gravitation but physical laws discovered by him are study hundred years.

For correct detection of emotions and psychophysiological characteristic on the current stage is more important to give clear definition of emotions and psychophysiological characteristics. The detail inside mechanism of emotion and behavior is very complicated including many feedbacks (Wiener, 1948; Scherer, 2005) and need to be study on the next stage of the process. Math definitions based on correlation of emotions, psychophysiological parameters and conscious parameters were suggested on the last monograph about vibraimage technology (Minkin, 2020).

The current world situation with hybrid war is very dangerous because different mental opinions have not objective regulation. Double standards and faked news are accepted in human life and politics. Scientists need to find the objective rules for human emotion, behavior and social regulation, like physical laws and it is not fascist approach to the science, it is only normal approach to human as a physical object accepted in natural sciences. I think that it is not ethic to use terms fascism in science publication but it is the reply to James Wright comments.

In my understanding, the ethics of James Wright looks like the Inquisition of the Middle Ages, the main goal of which is to stop scientific progress. However, this is not possible.

Famous Russian novelist Anton Chekhov wrote in 1889 year that if in the first act the gun is placed on the wall it must shoot in the third act. Therefore, if William James said in 1893 “the man is machine” and in the second act Norbert Wiener developed cybernetics that means AI will select suspect and normal people in the nearest future. It is the standard evolution process.

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PS

I think that it is difficult to ask William James and Norbert Wiener about suspect AI now, but it is possible to ask Minkin about vibraimage and AI. I am alive and many mistakes can be avoided by asking the developer directly. Inventor knows details and problems better than users.

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