

Data Description

The Workstress3D dataset defines a research approach that analyzes physiological signals to comprehend psychological stress. This dataset comprises four primary components.

1. Survey

The initial component encompasses survey data, comprising demographic information, instant surveys, PANAS scale responses, and a general stress test. The demographic survey provides an overview of participants, detailed in Table 1. The instant survey gauges current participant moods and can be answered multiple times, with questions outlined in Table 2. The general stress test evaluates stress scores based on responses to scenarios reflecting daily situations, as described in Table 3. The brief PANAS scale assesses positive and negative emotions, with questions in Table 4. Both the general stress test and PANAS scale employ a five-point Likert scale. These surveys aim to statistically analyze and enhance comprehension of attitudes and behaviors within the sampled population.

Table 1 : Description of demographic survey

Data	Data Type	Data Description
Participants	Integer	Participant's id number
Gender	String	Participant's age
Age	Integer	Participant's gender
Height	Integer	Participant's height (cm)
Weight	Integer	Participant's working type (public or private or not working)
Industry	String	Participant's marriage status
Occupation	String	Participant's profession
Marital Status	Boolean	Whether the participant is married or not
Smoking Status	Boolean	Whether the participant smoke or not
Chronic Disease	Boolean	Whether participant has a disease
Drug Status	Boolean	Whether participant use medication

Table 2: Instant survey

Question	Options
How do you currently feel?	Happy, Unhappy, Good, Bad, Neutral, Relaxed, Satisfied, Energetic, Excited, Tired, Nervous, Sad, Angry, Worried, Lonely, Guilty, Sick, and Other
What are you doing at the moment?	Work, rest, food/drink, cleaning, sports, hobby, awareness work, listening to music, watching videos, free time, and other
Is anyone else with you?	Manager, Owner, Colleague, Family Members, Partner, Friend, Strangers, Pets, and Nobody
Is there someone or something currently troubling you?	Yes, No and I Don't Know
Would you prefer to be somewhere else right now?	Yes, No and I Don't Know
Do you have the energy to complete additional tasks today?	Yes, No and I Don't Know

Table 3: General stress survey

Question number	Question
1	Are you attempting to juggle multiple jobs in a short period of time?
2	Do you grow impatient in cases of business disruptions or delays?
3	Do you always feel like you have to win in the games you play, even if it's for fun?
4	Do you try to cross the traffic light with your car when the red light is about to turn on?
5	Even if you need help with something you do, would you refrain from asking?
6	Do you always feel the need to earn the admiration of others and be respected?
7	Do you always criticize the way others do their job?
8	Do you frequently look at your watch or a clock?
9	Do you ever have excessive ambitions to improve your achievements and position?
10	Do you get the idea that time is not enough for you?
11	Do you have the habit of doing more than one task at once?
12	Do you often feel nervous or angry?
13	Do you find it difficult to find time for yourself and your hobbies?
14	Do you have a tendency to talk quickly or speed up conversations?
15	Do you consider yourself a difficult person to get along with?
16	Do your friends or relatives say that it's hard to get along with you?
17	Do you have a tendency to be involved in more than one project?
18	Do you often set deadlines for finishing your work?
19	Do you feel guilty when you take time off to rest or sit idle?

20	Do you ever put too much responsibility on yourself?
----	------------------------------------------------------

Table 4: Short PANAS

Question number	Question
1	Active
2	Attention
3	Vigilance
4	Angry
5	Hostility
6	Determined
7	Inspired
8	Fear
9	Unhappiness
10	Shame

2. Facial expressions

The second component categorizes facial expressions as either non-stressful (coded as 0) or stressful (coded as 1). The facial expression data consist of pixels from 48 x 48 grayscale images.

3. Audio

The third component, "Audio," comprises raw audio data directly collected from participants

4. Physiological signal

The physiological signal component file incorporates electrodermal activity (EDA), blood volume pressure (BVP), skin temperature, and accelerometer (ACC) data. EDA is sampled at 4 Hz and encompasses skin conductivity, phasic, and tonic aspects, distinguished by a threshold of approximately 0.05 ms. Skin temperature is consistently recorded at 4 Hz in degrees Celsius. Blood pressure data is derived from the 64 Hz Blood Volume Pulse (BVP) signal. Accelerometer data is gathered at 64 Hz to measure gravitational force (g) in all three spatial dimensions (x, y, and z). These signals are captured using Empatica E4 wristband sensors, and a downsampling technique is applied to standardize frequencies, balancing thorough physiological examination and continuous activity monitoring. The downsampling choice, reducing all inputs to 4 Hz, ensures a consistent and effectively fused dataset. The processing stage of physiological signals is shown in Figure 1.

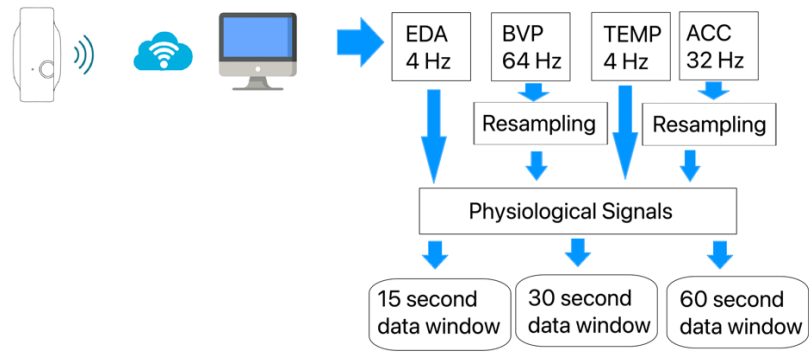


Fig. 1 The processing stage of physiological signals