Dogo Rangsang Research Journal ISSN : 2347-7180

N : 2347-7180 STRESS DETECTIONUSING IMAGE PROCESSING AND MACHINE LEARNING

MS.N.Pavani¹, ¹Associate Professor, Computer Science and Engineering, VNITSW. P.Supriya², A.SiriChandana³, B.Trinetra⁴, S.V.N.S.S.Supriya⁵, ^{2,3,4,5} IV B.Tech, Department of Computer Science and Engineering, Vignan's Nirula Institute of Technology & Science for Women,Guntur-522009, AndhraPradesh, India.Email id: pavani.valeti@gmail.com

ABSTRACT

The main motive of our project is to detect stress in the IT professionals using theatrical Machine learning and Image processing techniques. Our system is an enhanced version of the old stress detection systems thatkeep outlive detection and personal counseling. The system supports live detectionand regular analysis of employees. It detects both physical and mental stress levels and furnishes proper remedies by providing survey forms systematically. Our system mainly preventative measures that can help focuses on managing stress and you cope with it. Only medical making the working environment and physiological specialists will healthy and spontaneous for the currently decide whether or not.

Keywords – Stress, Facial Expression, Deep Learning, Framework.

INTRODUCTION

Stress management mechanisms are essential in detecting stress levels that interrupt our socioeconomic lives. According to the World Health Organization (WHO), stress is a mental health issue that affects one out of every four people. This necessitates the provision of counseling to help depressed people cope. It is notpossible to handlestress, so taking preventative measures can help you cope with it. Only medical and physiological specialists will currently decide whether or not anyone is depressed (stressed). Questionnaires are one of the most common methods for detecting tension. This approach is entirely dependent on the responses provided by individuals people would be hesitant to state whether they are anxious or not.Automatic stress monitoring reduces the risk of health problems and increasessociety's well-being. Investigated stress using data from respiration, heart rate (HR), facial electromyography (EMG), Galvanic skin response (GSR) foot, and GSR hand, concluding that features related to the respiratory process are important in stress detection. Maria Viqueira et al.define a method for predicting mental stress using a standalone stress sensing hardware with GSR as the only physiological sensor. David Liu et al. proposed a study based entirely on electrocardiograms to predict stresslevels (ECG). In, the effectiveness of multimodal sensors in detecting discomfort in working persons has done by investigated experimentally. It makes use of sensor data from pressure flow, heart rate, blood volume pulse(BVP), and electrodermal function, among other things (EDA). An eye-trackingsensor issued, which analyses the eyemotions with stressors such as the Stroop word examination and data from pickup activities. The investigators used a series of non-invasive sensors to monitor potential tension using physiological cues such as ECG, GSR, Electroencephalography (EEG), EMG, and peripheral oxygen saturation (SpO2). Physiological sensor data such as GSR, EMG, HR, and Respirationare functional to estimate continuous stress levels. By developing ICT-associated Stressors, we can efficiently detect stress levels using Skin conductancelevel (SCL), HR, and Facial EMG sensors. Several pattern recognition algorithms allow for automated stress detection. Per sensor reading is related to a stress indexused todetermine stress levels.

SYSTEM ANALYSIS EXISTING SYSTEM

Practicing pressure detection on a current device depends on the optical signal processingthat monitors Galvanic skin response, blood flow, pupil increase, and skin temperature. Another research on this topicrelies on various physiological cues and facial features to track a person's stress levels when they are at work.

UGC Care Group I Journal

PROPOSED SYSTEM

The current system relies onoptical signal processing to identify tension, which considers Galvanic skin response, blood pressure, pupil dilation, and skin temperature. The proposed system Machine Learning algorithms are applied to classify stress. Image processing is at the initial stage for detection. By taking input as image and output may be image or characteristics associated with those images. It displays emotion on the rounder box. The stress levelindicating by anger, fear, Disgusted.



DIAGRAM FOR DATAFLOW

Fig 1: SYSTEM ARCHITECTURE

Bubble map is another name for a DFD.It is a basic graphical formalism used to describe a device interms of that data receiver, that processing it performs on that data itgenerates as output.

DFD depicts how the data flows through the system and is transformed by a sequence of transformations. It's a schematic representation of data flow. These transformations occur when data travels from the input to output.

One of the most popular simulations of the methods is the dataflow diagram(DFD). It represents the system's various components. DFD defines a system structure. It categorizes the system into two categories, representing a different level of knowledge flow and functional detail.

RESULT

Home Page



Dogo Rangsang Research Journal ISSN: 2347-7180



User Register page



User Login Form



Dogo Rangsang Research Journal ISSN : 2347-7180 User Home Page



Giving Image as Input

Upload Image

St	ess D	etection i	n IT P	rofessionals	Home Im	age L	iveCam	KNN log
		ι	Jpload 6	an Image to 40X480 Reso ctanimage Choose File course	o test which plutions	is		
Upleas								
	-							
Rea	sults t	able	Inter			Income	10000	Feedman
Re	Sults t	tensipy	Eastives Neutral	File /media/test3.pg	114 Aug 24, 2020, 4:54 is m.		Download Download	Emotions View
Re:	Sults t Unit Anna Alex Alex	table Finitum fest3 (pp fest2 (pp	Leading Neutral Sad	Pie Zmedia/test3.pg Zmedia/test2.pg	2000 Aug 24, 2020, 454 a.m. Aug 24, 2020, 454 a.m.		Countees Countees Counteed	Emotions Emotions Vew Emotions Vew

Response Image

			50	d a huy Doos file in fire				
					these			
les	ults	table	1			-	-	
	Alti	aug bi	Nettel.	meta-testa pg	4q36332459am	.cí	Jonate	Enotone Vine
2	RE .	₩	94 -	(methalant).pg	AQ343024945	1	Develor	Endore Ver
2	181	unur, ande bit	Агру	indense, naj pj	Ag (CERCANAN	勠	2mmilion	Endors Ver
	-Ret	course, 3, 1746 (3)	19407	midalauraca, Chillipp	Ag 25,202,424 am	10	Storical	Enotions View

Live Stream



Results

Deep Learning Frame Result



Deep Learning Frame
Page | 134

Copyright @ 2021 Authors

Dogo Rangsang Research Journal ISSN : 2347-7180 KNN Results

Dataset View

♦ + C © soherCOlliseEeleite:									A 🛪 🛢 🔙
Strate herecoon m to	PINNESKA	OLAUS.			110108	reade	LYTURE	howe	solow
			Re	sults tabl	le				
	Tere	Time states		in Dealfraind In-	- Orlense	advarbated.			
	11	0.00¥	4.01	21945 34/24	81 1448	11.05			
	1.0	0.008	8.141	1109 215%	711128	74.84			
	20	500	8.754	1477 2357	84,7898	30 HC			
	3.0	3015	8.112	177208142	81,2419	32415			
	4.0	0.940	8.40	4.529 3.524	84 1229	36.80			
	\$-1	0.088	3.56	8423 10.005	\$1.000	14.12 ¹			
	82	0.005	8.00	11.01%-029	747142	36.298			
	2.5	0126	\$21	8.257 #355	881425	67.86			
	80	0326	3.100	4.472 (5.178	111/40	35.260			
	92	0354	8.02	7157 7.348	792382	14.465			
	340	2018	\$101	3-025 9-400	84.5088	40.465			
	110	0.004	\$279	A 109 32 510	\$4,1025	45.55			
	12	3325	8100	1108217402	94,7983	38,347			
	120	2,005	8.102	11.00217.541	115/080	36.367			
	340	0284	8.542	\$213 B 178	210418	40.154			
	185	3109	8.01	\$313 24775	211.080	35.NC			
	360	0.000	\$31	3086 8.070	73.1038	37.407			
	870	Q108	8.045	3 059 2:578	86,0128	31.610			
	380	9109	8.754	1477 3:557	80.4369	38.788			
	390	0.000	\$101	8713393345	710080	10.3M			
	291	9.000	8.60	3123403.567	371348	37465			
	21)	335H	4.85	8/88 35.798	991445	31.579			
	220	0.550	8.40	4.826 3.014	36,5789	#C39C			
	230	0.000	8.231	110070-208	74710	35,858			
24	240	0.008	8.48	\$257 8,855	714365	45.896			
C Andrewson and	0.0			1 10 10 1					DATES OF A

Admin Login Form



Admin Home Page



Activate Users

Dogo Rangsang Research Journal ISSN : 2347-7180



Detected Images

Admin side Results



KNN Results



CONCLUSION

The stress detection system monitors recorded photographs of authenticated users to anticipate stress in workers, making the system safe. When the authenticated user logs in, the image capture is performed automatically depending on the period time. Depending on specific methods of transferring and viewing images, photographs help in detectinguser conflicts. The framework would then use machine learning algorithms to evaluate the tension thresholds, resulting in more effective performance.

REFERENCES

- [1]G.Giannakakis,D.Manousos,F.Chiarugi,"Stress and anxiety detection using facial cues from videos, " Biomedical SignalProcessingand Control",vol.31,pp.89-101,January 2017.
- [1] T.jick and R.Payne,"Stress at work,"Journal of Management Education, vol. 5, no.3, pp.50-56, 1980
- [2] Nisha Raichur, Nidhi Lonakadi, Priyanka Mural, "Detection of StressUsing Image Processing and Machine Learning Techniques", vol.9, no. 3S, July2017.
- [4] Bhattacharyya, R., & Basu, S. (2018). Retrieved from 'The Economic Times.
- [3] OSMI Mental Health in Tech Surv y Dataset, 2017.
- [4]https://www.kaggle.com/qiriro/stress
- [5] Communications, World health report. 2001. URL: http://www.who.int/whr/2001/media_centr e/press_release/en/.
- [6] U. S. Reddy, A. V. Thota, and A. Dharun, "Machine Learning Techniques for Stress Prediction in Working Employees," 2018 IEEE International Conference on Computational Intelligence and Computing Research (ICCIC), Madurai, India, 2018, pp. 1-4
- [7] Deng, Y., Wu, Z., Chu, C.H., Zhang, Q., Hsu, D.F. Sensor feature selection and combination for stress identification using combinatorial fusion. International Journal of Advanced Robotic Systems 2013;10(8):306.
- [8] Ghaderi, A., French, J, Farnam, A. Machine learning-based signal processing using physiological signals for stress detection. In: 2015 22nd Iranian Conference onBiomedical Engineering (ICBME). 2015, p.93–98.

Dogo Rangsang Research Journal ISSN : 2347-7180

- [9] Palanisamy, K., Murugappan, M., Yaacob, S.. Multiple physiological signal-based human stress identification using non-linear classifiers. Elektronika ir elektrotechnika 2013, 19(7):80–85. [10] Liu, D., Ulrich, M.. Listen to yourheart: Stress prediction using consumer heart rate sensors 2015.
- [11] Selvaraj, Psychological acute stress measurement using a wireless adhesive biosensor. In: 2015 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC). 2015, p. 3137–3140
- [12] Rajagopalan, S.S., Murthy, O.R., Goecke, R., Rozga, A.. Play with measuring a child's engagement in social interaction. In: Automatic Face and Gesture Recognition (FG), 2015 11th IEEE International Conference and Workshops on; vol. 1. IEEE; 2015, p. 1–8.