

## IDEATIONPHASE LITERATURESURVEY

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<b>TeamID</b>	PNT2022TMID50475
<b>Project Name</b>	Project - Real-Time Communication System Powered by AI for Specially Abled

### **1. Based Real Time Communication for Physically and Speech Disabled People (Ong Chin Ann, Marlene Valeriu Lu – 2019)**

Communication is a social process of exchanging information from one entity to another in verbal and non-verbal form. It defines our existence and it is an important instrument that connects people together. It comes naturally as a raw skill embedded in most people at birth and we acquired the way of communication through cognitive learning. Communication is the basis, which drives the process of development in all the fields (Manohar, 2008) and it is the very core of our civilisation. The ability to communicate allows us to express emotion, feelings, convey our thoughts and ideas as well as to relate our experiences. It plays an important role in the dissemination of information and sharing of knowledge especially in the academic arena. Research has found that human started to learn how to communicate with each other since they are born not only through spoken and written languages but also body gesture, posture, facial expression and eye contacts (Busso, et al., 2004; Cohen, Grag & Huang, 2000).

Communication skill might come as a natural ability in majority of people. However, there are some people inflicted with some form of physical defects which affect their ability to communicate. One of the more severe disabilities is known as “cerebral palsy”, a congenital disorder at birth which causes abnormality in their Motor system. It affects their muscle movement and coordination, learning and Speech abilities. Their malfunctioned motor system causes an uncontrollable and involuntary movement. They are unable to control their oral facial muscles, thus affect their ability to perform facial expression appropriately.

From the limitation of the existing tools reviewed (Novita, 2006; Macsolvers, 2009; Standup, 2006; Universiteit van Amsterdam, 2008; Crestwood, 2009; Science Daily, 2008), there is still a pressing need for more effective and efficient tools to alleviate this problem. One of the possible methods are to implement a facial expression recognition system to predict or determine the emotional state of a disabled person through his expression projected on his face. Biometrics information system can be employed as a means to detect and classify the physiological aspect of a person in real time. Franco and Treves (2001) further support the notion that facial expression can be used for human computer interaction and usability enhancement.

Based on the problem statements deliberated above, we propose an improved real-time communication system using machine learning and computer vision. The aim is to create a communication channel between the specially abled and the society, so they can express their feelings, thoughts and understand other people's feelings and thoughts through real time communication and facial expressions.

## **2. Systematic review of computer vision semantic analysis in medical (Antonio Victor Alencar Lundgren, Byron Leite Dantas Bezzerra – 2021)**

Medical diagnosing techniques have fascinated us for a long time. It has been common for us to use them in our daily life and implement these technologies. Machine learning and especially computer vision contribute a lot in medical science, which makes different difficult tasks easy for doctors and more tolerable for patients. They are widely useful in early detection of disease, and hence are a valuable tool to save human life. Cardio graphic techniques are a must for old age and infants safety.

These include:

- **Retinoscopy** - They although primitive in approach are a must once in a life time and retinoscopy have made yet successful to measure activities of rods and cones receptors in our eyes. Retina has three distinct areas for colors - erythrolobe, chlorolobe and cyanolobe... which are analogical to pixel fixation and identification algorithms on machine learning.
- **Tumor detection** - Cancer is spreading in the world affecting billions of lives both in terms of life and money... machine learning diagnosing systems apply their identification systems to further develop accurate detection in terms of size, location, quality of such tissues which are suspected to become malignant uncontrolled group of fast dividing cells.

**CT scan - CT scan** – A very common term for cancer patients which uses electromagnetic radiations under manually operated controlled computer vision gratings which are so accurate that it can measure a pigment called dc-125 in blood.

### **3. A survey on Facial Emotion Recognition Techniques (Felipe Zago Canal, Tobias Rossi Muller, Gustavo Gino Scotton – 2022)**

Facial expressions recognition is an ability to recognize people by their facial characteristic and differentiate it with one another. Human is born with the ability to recognize other people easily by identifying their facial features such as shape, appearance, skin texture and skin complexion. Other than that, humans also have the ability to express, interpret and differentiate facial expressions. The regular recurring ones are happiness, anger, disgust, fear, surprise and sad (Ekman & Friesen, 1978). The six facial emotions stated above are important and play a major role in expressing emotion as well as recognising facial expression (Busso, et al, 2004).

In real life, inter personal human interaction are performed not only using speech or spoken language, but also nonverbal cues for example hand gesture, body gesture, facial expression and tone of the voice. All these cues are sometimes being used for expressing feeling and give feedback (Busso, et al, 2004; Cohen, et al., 2000). We can see how human interact with each other using non-verbal cues every day. For example a child cries in front of his mother because he is not happy or dissatisfied with something. Other people might interpret it differently thinking that the child might be in pain.

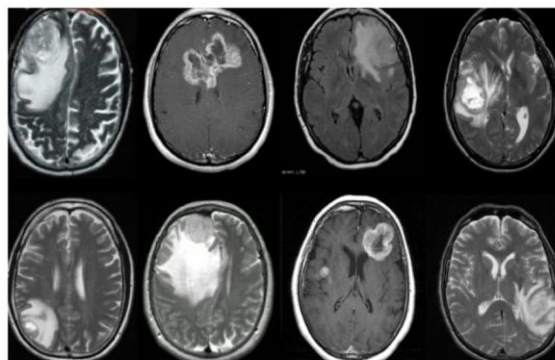
Facial expression interaction is relevant mainly for community social life, teacher and student interaction, credibility in difference contexts, medicine and so on. Besides, facial expression recognition is useful for designing new interactive devices which offers the possibility of new ways for human computer interaction - HCI (Franco & Treves, 2001). Cohen, et al. (2000) conducted survey on their users and noticed that they have been through traditionally HCI consist of the keyboard, mouse, joystick, trackballs, data gloves and touchscreen monitors.

Facial Expression Recognition System (FER) has been a topic for research since Ekman and Friesen (1978) who pioneered this research and worked from the psychology perspective. In the past 20 years, many researchers have tried to adopt their idea and make improvement, innovation and modification on facial expression recognition by introducing different techniques, mainly concentrated on the improvement in term of accuracy, efficiency, mobility, and speed (Kotsia & Pitas, 2007). With all the enhancements on techniques for facial detection and recognition, the development of the facial expression recognition has also improved (Zhan & Zhou, 2007). The most active researches in computer vision and pattern recognition is face recognition in forensic identification, access control, user interface design (Wang, Plataniotis & Venetsanopoulos, 2005), emotion analysis, interactive video, indexing and retrieval of image and video database, image understanding and synthetic face animation (Zhan & Zhou, 2007).

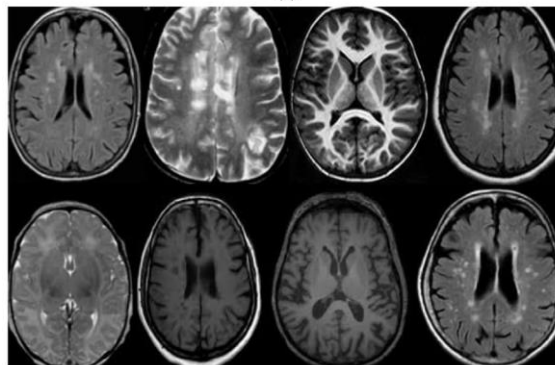
Human can interpret and generate major facial expressions but a computer is not built with any facial recognition ability unless through the use of some software. It is even more complicated for the computer to interpret irregular facial expression, especially from those suffering from cerebral palsy. Due to their disorder, they do not have the ability to reflect their emotions like a normal typical person. Thus, a more natural and naive method has to be employed for the system to work by a manual labelling of the image captured with the emotion of the user.

#### 4. A Survey Paper On Brain tumor using Machine Learning( Brain Tumor Analysis Empowered With Deep Learning Alves V.,Silva C.A)

Now a days, we people solving many problems of brain tumors. The detection of brain tumors has adapted to general causation in healthcare . Brain tumor is known as the mass of growth of abnormal cells in our brain. The existing brain tumors are different types, some brain tumors are "noncancerous" and they some tumors are "cancerous". We Identify the brain tumors in order in the way of MRI segmentation . It is the presence of regarding the brain tumor there is an abundance of hidden information should be stored in healthcare areas. Any disease can be carried out effectively. In the medical field, the technique of machine learning can be used in this field of brain tumors. In the existing system we use X-RAYs and CTs scans to find the symptoms of brain tumor. In the proposed system,we use MRI scan to identify the brain tumor. It is advanced and better than X-RAYs and CTs scan. The most powerful in the world for human imaging has just unveiled its first image. The advance MRI should be leading to strongly improved diagnostics capabilities for implant imaging .



(a)



(b)

**5.A Survey Paper On Automatic Skin  
Cancer In Dermoscopy Images Based On  
Machine Learning Algorithm (I.M.Bruce  
,C.H Koger,and J.li Dimensionality  
reduction of hyper spectral data using  
discrete wavelet transform feature  
extraction .)**

In human skin is the core part which helps to cover the muscles, bones and our internal entire body. Preliminary detection of skin cancer dwindle mortality and morbidity .This paper presents two hybrid technology for the deviation of the skin images to forecast to it if exist. The proposed hybrid technology contains of triplet phases. Namely feature extraction, dimensionality reduction and classification. The initial classifier based on feed forward back propagation artificial neural network. And the second classifier based on Greedy approach and random forest approach. The classifier has been used to classified subjects as normal or abnormal and 97.5 abnormal skin care images.



## 6. Survey on application of Artificial Intelligence in Cyber Security (Shidawa Baba Atiku, Achi Umke Aaron, Fatima Shittu – 2020)

Cyber security refers to protecting your personal computer from malicious software.

Machine learning has a lot many algorithms and systems which protect users from threats. Such as

the PayPal app which was developed in December 1998, uses machine learning algorithms to protect its users from different threats and online spoofing. It uses three types of machine learning algorithms that are linear, neural network, and deep learning algorithm.

They are:

- **Waterhole** - It is like a pit surrounded by greenery. Hackers access other people's information by using sites which are more accessible to the public more than anything else.... for example, networks in a coffee shop is accessed by so many users such that these users load their pc 's with whatsoever data is provided to them. Like this there are so many sites to put on viruses and worms. Machine learning has algorithms that detect paths of these malware blocking them with a firewall thereafter.
- **Webshell** - These are pieces of code which are loaded into a working device which provoke the user to misjudge and then taking advantage, entry is gained into the full database.
- **Ransomware** - Similar to webshell, but here the user is vulnerably threatened externally by a group of software brokers who have corrupted the users' personal files. Such scenarios can be totally avoided by using machine level language which was early detection.

