IDEATHON 3.0

"COMA-A VIRTUAL REALITY"

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ABSTRACT:

"Every Innovation was once an Idea!"

Today, we walk, respond to people and express our feelings directly to anyone around us. Imagine being able to hear, feel and think -but not see or move! Around you, you can hear doctors and family members saying that you cannot understand or make decisions. The nightmare scenario is a reality of tens of thousands of people worldwide who have been diagnosed as being in a "Coma" but can, understand what is going around them.

So how does a person in coma even try communicating or responding to his environment normally? This gives us a plan to come up with: "Coma-A Virtual Reality". This technique would enable one to study the brain activity of a coma patient by converting it into signals with the help of data received by EEG

(Electroencephalogram), the EQ-Radio and thereby processing it using the VR Technology.

As per a study conducted recently, 15-20% of the coma patients may be fully conscious. They are able to hear the things happening around them and understand it too, but not able to respond due their medical condition. So why not find a way of channeling a PATH for them to express their feelings too?

INTRODUCTION:

"Coma-A Virtual Reality" is a technique which would consist of an EEG, a device used to evaluate the electrical activity of the brain. Brain cells communicate with each other through electrical impulses. An EEG can be used to help detect the potential problems associated with this activity. It tracks and records brain wave patterns. An EEG is used to detect the problems in the issues of the brain. If an EEG is able to do all such things, which was once just an imagination, why can't we think of "EEG-2.0"?

So the EEG-2.0 would consist of an EEG along with an "EQ-Radio", a device that can detect a person's emotions using wireless signals. By measuring subtle changes in breathing and heart rhythms, EQ-radio is very accurate at detecting if a person is excited, happy, angry or sad without on body sensors. EEG-2.0 would be a device, which can't just detect the problems of the patient, rather read his mind too. If a person's mind can be read and the brain activity of his mind be recorded, we can actually understand what's going on in his mind. Later, this data can be treated with a Computer graphics Software to convert it into a video, depicting the patient, an audio (which would consist the actual words iterated in the patient's mind). Later, the video is sent from the computer to the VR-headset via a HDMI (High Definition Multimedia Interface) cable.

(BACKDROP): Coma may result from intoxication (like drug abuse, overdose or misuse of medications), metabolic abnormalities, central nervous system diseases, acute neurologic injuries (for example, stroke, hernia, hypoxia, hypothermia) or traumatic injuries caused by falls or vehicle collisions, etc. In some instances coma may be deliberately induced using pharmaceutical agents in order to preserve higher brain functions following brain trauma, or to save the patient from extreme pain during healing of injuries or diseases. When people are in coma, they are unconscious, however, the brain of the patient may hear the sounds in the environment, like the footsteps of someone approaching, the voice of people talking, etc.

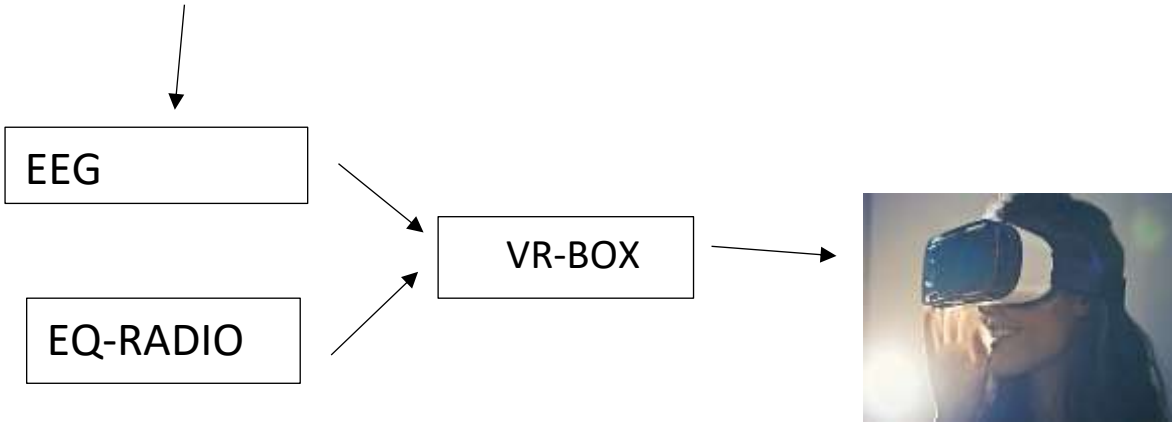
MOTIVATION:

There are thousands of people worldwide who are in coma. Of them, the people who are in "shallow coma state" are very well aware of the things happening around them. They listen to the things around, want to respond, but are helpless. More helpless are their well-wishers and families, who are longing for them to give a reply.

They know that the person can sense things and want to reply, but how does he even do it? The above proposed plan gives a platform, bridging the gap between them. The person's feelings, emotions, imaginations, everything can be sensed, in fact, be visualized by the people.

"Coma-A Virtual Reality" would give an opportunity to the patients' doctors, his family and well-wishers to get an experience of interacting with the patient, a person who is unable to walk, speak or react, as if he was really standing in front of them. This is fascinating enough!

METHODOLOGY:



EEG: Prognostication in comatose patients continue to be a challenge due to an increased survival rate with the help of medical developments. EEG, one of the most informative neurophysiological techniques available in the neurocritical care unit (NCU), can be used as a bedside complement to clinical evaluation in comatose patients. But, the problem of EEG is that they can only process the average signal of millions of neurons together**.** So, instead of relying on rigid electrodes, flexible threads full of sensors can be used. These threads are safer to be inserted into the brain because, being flexible, they cope better with brain movements. This means better reading of data from it (because the brain doesn't create scars around the sensors). These threads are all
scattered with electrodes that are able to detect the activity of the neurons.

EQ-Radio: EQ-radio, a new technology from MIT can infer a person's emotions from RF signals reflected off his body. It transmits an RF signal and analyzes its reflections off a person's body to recognize his emotional state. The key enabler underlying EQ-Radio is a new algorithm for extracting the individual heartbeats from the wireless signal.

VR-Box: A Virtual Reality Headset is a head-mounted device that provides Virtual Reality for the wearer. Virtual Reality headsets are widely used in simulator and trainers. It gives us a stimulated experience that can be similar to real world.

SOCIAL IMPACT:

Any idea which benefits the society, is an idea worth being implemented. This technique would bring in a great reformation not just in the lives of the coma patients, but also in the lives of those who are not able to speak, by knowing their emotions and feelings.

Coming back to the coma patients, this technique would express the unexpressed things, and sometimes also solve many a mysteries.

For example, if the patient has got into a coma due to some accident or any unethical incident, by reading his brain, everyone will be able to know the actual cause of him getting into this condition.

MARKET SURVEY:

This technique can be implemented in medical fields. In a more commercial context, it can also allow us to see the types of reactions consumers are having, while we aren't literally getting inside their heads, we can understand at least some of what is going on in their mind. By monitoring activity in different parts of the brain, we can associate what type of reaction the consumer is having to different stimuli. This technique would allow you to spot patterns of activity associated with different areas of the human mind.

Most of the brain activity is not conscious, a lot of what goes on in the human mind is at a subconscious level. Some of these subconscious links may be hidden deep in the psyche of a consumer and impossible even for them to guess. As with other types of market research which involve quantitative data sets, the results of this technique are also able to be calibrated by comparing them to the benchmark results in a relevant category, usage experience, user group or another such grouping.