

Abstract

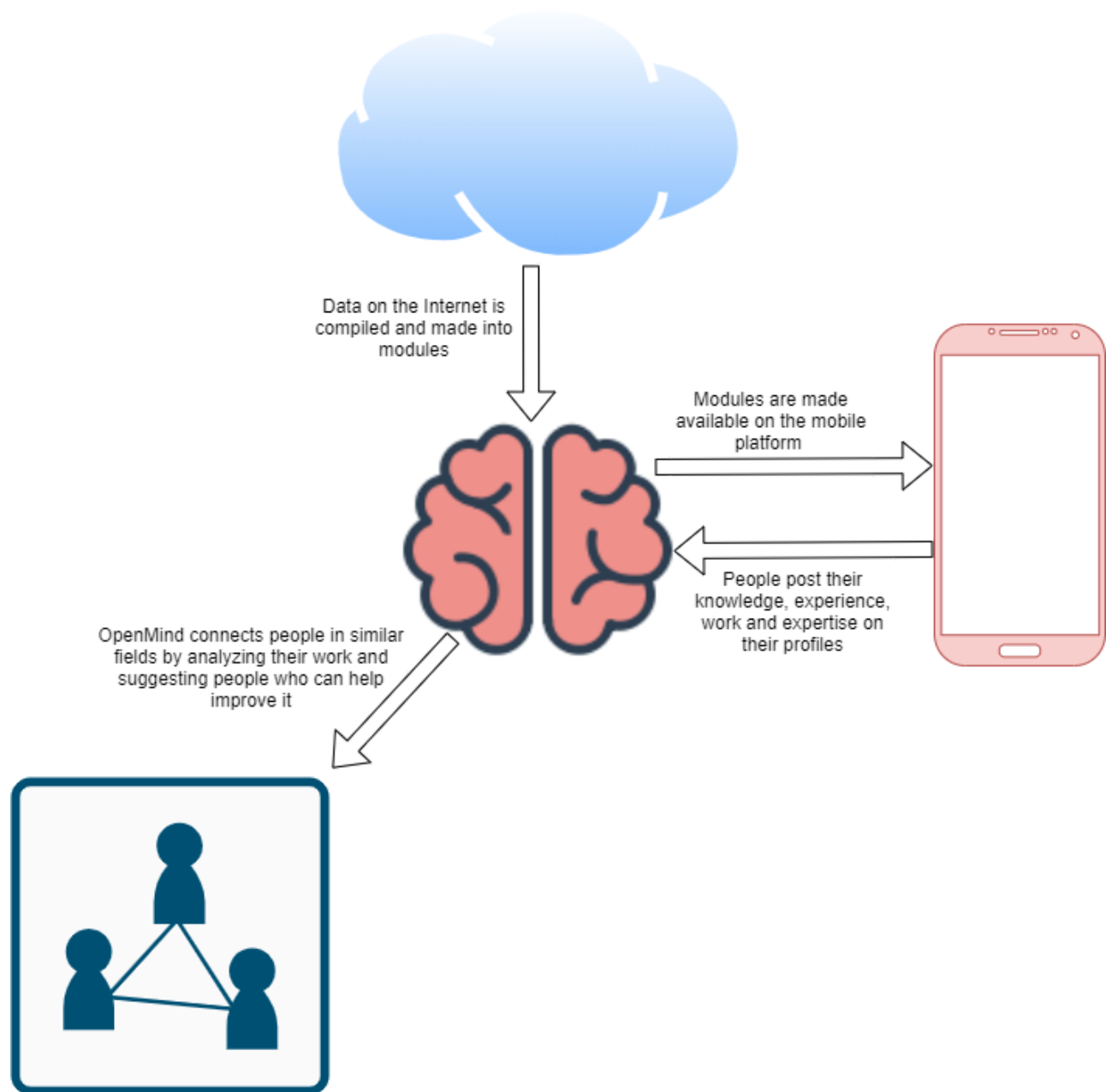
The outbreak of COVID-19 showcased the inability of humans to act fast in producing an effective drug. To drastically reduce the amount of time taken in drug development, quantum computers have been used by researchers such as Swaroop Ghosh at Penn State. However, a large amount of time also goes in human trials.

To solve this problem and enable fast drug development and deployment, I propose the development of nano living analysers. These are cellular, organic robots that analyse bodily functions and transmit this crucial data through a smart device to a new species of quantum computer: the OpenMind.

In this paper, I describe the architecture of each of these technologies and how they will act together to vastly improve global health and security as well as how OpenMind will pave the path to global access to open knowledge. Thus leading humanity on the God Path.

OpenMind Initiative

The OpenMind initiative is inspired from the European Union's Open Science programme. OpenMind strives to build a platform on which the global community can upload knowledge which is sorted and categorized by a quantum brain. All knowledge is freely available, but the method of being provided with that knowledge through online courses, books, teachers- all these resources are paid and that creates a barrier for many.



OpenMind removes these barriers by crawling the Internet to collect and organise all freely available resources for a particular topic and compiles them into one interactive learning resource while using Blockchain technology to provide the credits to contributors of each resource.

This will be a step into Satya Yuga where knowledge is transparent and humanity is unified.

I conducted a social experiment as a proof of concept for OpenMind which is outlined below.

Aim

To provide a proof of concept for the Open Mind platform that aims to develop global collaboration and communication between different peoples and communities as well as become a source of positivity through sharing of knowledge. Due to the experiment being performed at a stressful time the aim became the spreading of positivity and building unity within the residents under lockdown.

Hypothesis

I hypothesise that people will be coming forward and participating, however, the number of people I expect to participate is between 5-10 people. This is a small participation but the fear of being judged by others may be an inhibition for many. Furthermore, many may also perceive the activity to be procrastinatory or escapist in nature instead of the message about positivity and better mental health being conveyed to them. I also hypothesise that the participants will follow a herd behaviour such that when one participant laughs or shares their responses to questions that are asked after the activity, only then will others follow.

Steps

I talked to the residential society's chairman about implementing the idea of everyone laughing outside on their balconies for 5 minutes. Receiving the green light, I proceeded to create a separate Whatsapp group on which the interested participants were added. Everyday at 4:50 pm sharp a gentle reminder was sent to the group for everyone to laugh at 5 pm. I would commence the laughter everyday and laughed loudly. This was the initiator for others to join in. A laughter track was sent to the group after the first day - if the experiment is to be replicated, I suggest sending the track beforehand.

I sent two thought-provoking questions- "Do you live to work or work to live?" and "During the quarantine, what have you observed around you? Has COVID-19 been harmful or beneficial?" -questions that help a person to introspect. These were sent on days 2 and 4. On days 1, 3 and 6 I asked for the people's suggestions and experience of that day's session. There were two responses to the experience question on day 1 only

and no response whatsoever after that. I did share two memes on day 5 but there was no response to it nor could I have recorded the response. This was done after our laughing activity so as to keep up the positivity, happiness, unity and participation from the participants' side as was the goal of this experiment.

Observations

When the idea was proposed there was massive support and appreciation from the residents' side and on the first day of the experiment I could see 23 people participating or watching outside their balconies. Some of the buildings are hidden from my view but there was distinct laughter heard from my blind spot so that must mean there were more people participating and watching. However from the second day onwards the participation steeply dropped and there were only 4 people seen from my view. To remedy this I wrote an emotional message conveying the negative effect of lockdown on mental health and how a simple activity of laughing could prevent that and also sent a laughter track that everyone could listen to so as to remove the awkwardness that many felt while laughing. On day 3 there were 17 people taking part. However, again on day 4 there was a slight drop and there were only 8 people to be seen. I then contacted some of the people I knew and told them that I would appreciate it if they participated and how this activity would be beneficial to them. This led to yet another rise in participation on day 5 wherein the highest number of participants- 34 people were seen- and more were heard. As if a pattern, on day 6 there was a steep drop to 3 people outside their balconies watching and no participation in the laughter. On day 7, before the activity I conveyed that day 7 will be the last day of the activity through a heartfelt message. I also conveyed my appreciation of whatever participation we had in the message. However, there were 5 people to be seen and no laughter other than my family and my own was heard.

It was exciting when other people's laughter was heard. It happened on days 1,2,3,5. When other people laughed there was a greater motivation for us to laugh as well because we did not know who was laughing and simply hearing them was nothing less than finding a friend in the dark.

The lack of participation could have been due to a fatigue effect because the activity started daily at 5 pm. This is less possible because there was a drop in participation right after the first day.

The best explanation for the lack of participation would be tiredness. India is a warm & dusty country, and in a typical Indian household, the daily chores of cleaning the house, washing dishes and cooking food are done by maid servants. Due to lockdown all the maid servants were dismissed and suddenly the residents had to do all those chores themselves and by the time they had finished off with doing dishes and cleaning the house by lunch, all of them were very tired and would go to sleep around 3 pm. I

confirmed this after observing my own household and after asking others for their opinions, suggestions and difficulties related to the activity. Due to being tired they would feel negatively about going outside and laughing and prefer to sleep or rest.

Furthermore, when asked for suggestions or to reply to the 2 thought-provoking questions there was no reply on the Whatsapp Group. This may be due to an audience effect i.e the psychological factor of feeling judged by people.

They may have also not replied due to being preoccupied by the stress of COVID-19 and arranging groceries, sanitisers and hand wash for their homes. There were mainly female participants which must have led to them not responding due the immense emotional stress they felt due to having a higher level of emotional quotient than males.

Conclusions

The experiment was a success. There is no method of measuring the positivity that was spread but people did come out to see. Even passerbyers on the road stopped to look at us. They must have felt amused, as I deduced from their pointing fingers and laughing but that was a positive feeling. They must have told that moment in their life to their friends and family and may have even laughed about it. That is proof of positivity being spread. As for collaboration, on any given day there were at least more than 2 people present. That participation is proof of people collaborating and taking the effort to join in.

The most important thing I noticed was that while laughing, suddenly when you hear another person laugh it excites both the people and becomes a language of its own. This provided a sense of unity and the assurance that all of us were in the lockdown together and would support each other.

In this experiment, I was the quantum brain that spread positivity. The experiment ended after one week due to growing COVID-19 cases and since participants were standing within 2 feet of each other I decided it was not safe to continue. I made daily reports of everyone's experiences and what we discussed and uploaded the results to my Instagram account so everyone could access them and notice the difference (this was done after the lockdown period to avoid participants perceiving the activity as an experiment and thus changing their behaviours).

However, there were still a lot of discrepancies. As written in the outline of the experiment above, I noticed people were unwilling to express themselves to people they knew really well. I was able to conclude that when a person talks to a computer screen, without feeling the audience effect, they are very open and expressive.

That is what the OM platform will change. People can upload information of all genres- they can upload jokes, stories, research papers, calm music, their playlists, their practice with instruments, anything.

Users can use the OM platform to listen to positive music in the mornings, or to do Yoga, or learn the correct recipes for ayurvedic medicines. We will essentially build the ultimate MOOC (Massive Open Online Course). Teachers can find resources from around the world that can help them provide the students with holistic knowledge. Students can advance further than books and instead of searching the internet for tough questions, or "best resource for X topic", they find research, articles, opinions, experiments, inventions from all around the world which will enable them to identify the persons whom they can contact & discuss ideas with - such as professors, scientists, etc- whilst also helping those persons and their work gain greater recognition.

This is not a search engine or a MOOC that exists now. The crucial difference is the quantum brain that categorizes and compiles information in a more user friendly way and allows users to express themselves and find and collaborate with multilingual, multiracial, multiethnic communities on music, science, space travel, environmental sciences, any topic that anyone is researching and posts their thoughts on OM. The platform recommends other people who are doing or are interested in doing work in that area. Imagine a French musician being suggested to an Australian singer because OM analysed their work and could judge which combinations would fit best. OM will be the final realisation of the power of data analytics, quantum computing, artificial intelligence and knowledge. Remember, all knowledge is freely available, but the method of being provided with that knowledge through online courses, books, teachers- all these resources are paid and that creates a barrier for many.

OpenMind will be a realisation of the concept of openness in Hinduism, allowing for undeterred sharing of thoughts.

Talking About OpenMind with Industry Leading Researchers

I discussed my ideas and findings with Dr Amit Ray, one of the leading pioneers in the Compassionate AI movement, and with Dr Bikas Chakrabarti, a Bose National Fellow and renowned researcher on statistical physics and condensed matter physics.

With Dr Amit Ray:

I asked questions on how quantum computing could be a pathway to quantify feelings, emotions and memories, thus becoming an access to the Morpnic Resonance¹ of new species of Emotionally Intelligent Life and Biohybrids. With the logic that qubits exist in a paradoxical state,

¹ Morpnic Resonance: <https://www.sheldrake.org/research/morpnic-resonance/introduction>

ranging from values between 0 and 1. Feelings and emotions are well known paradoxes, sometimes a person feels "hate" for a person they "love". This dynamic state of qubits could be used in quantum machine learning to formulate feelings and emotions.

His response was that feelings cannot be coded therefore this situation cannot arise since all that is coded is what can exist. Though we did argue on this for a while, I moved on.

I then talked to him about teaching morality to Artificial Intelligence so humans and organic life can coexist symbiotically. To this he replied that Compassionate AI is an initiative for that very purpose and morality can only be taught when AI learns the teachings taught in the Srimad Bhagvat Gita which teaches humans the difference between karma, dharma, right and wrong. I agree with him on this, having read the Gita along with other such texts and finding out that the level of openness of thoughts and ideas are not present elsewhere.

I asked him about his opinions on OpenMind.

He responded saying that though the developments in quantum computing have become stagnant, if it would exist, a technology like OpenMind would make life much easier for him. People contact him through other mutual contacts or look him up. There is no professional, streamlined process on which researchers can collaborate and develop ideas. He concluded saying that many inventions could be faster because of this.

With [Dr Bikas K. Chakrabarti](#):

In my discussion with Dr Chakrabarti we talked more on how quantum computers work and why they will be a breakthrough. I have listed these facts in the paper in the section titled "Visualising the Opportunities presented by Emerging Technologies". He referred the book "Quantum Computation and Quantum Information" to me so I can better understand how to build OpenMind.

He also said that the use of Quantum Computers is limited to solving NP-Hard Problems; however, this new species of computers have brought Moore's Law to another level where we will reach a point, highly likely in the next decade itself, where nanotechnology and quantum computers are integrated as one.

Visualising the Opportunities presented by Emerging Technologies

Quantum Computers have risen leaps and bounds from elegant equations on paper to existing in the physical realm. Currently quantum computers are the fastest species of computers. This is because they use qubits to process data. Qubits exist in paradoxes so in comparison to a binary system where one bit has a value of either 1 or 0, one qubit can have a value of 1, 0 and infinite values between 1 and 0 at the same time. The paradoxical state of a qubit existing as a 1 and 0 is called superposition and allows each qubit to hold more data. When each qubit interacts in sync with other qubits due to entanglement² and is able to process extremely complex data in a fraction of the time it would take a classical PC. This essentially means that for the same tasks a quantum computer requires lesser steps to complete the task as compared to a classical PC because of quantum annealing³. Quantum annealing is the basic process of optimising a system by finding the least energy requiring a path to completing a task. Quantum computers are being used to evaluate and find cures for diseases by analysing complex chemical configurations and delivering the most potent ones.

Invented by Sam Kriegman, Douglas Blackiston, Michael Levin, and Josh Bongard, the Xenobot is a breakthrough in the realm of developing organic artificial life. We have only just started realising the limitlessness of the Xenobot's uses and how cellular artificial life will advance humanity on the Negative Kardashev Scale. Made from the stem cells from the *Xenopus Laevis*, Xenobots are a new species that have the ability to self repair and of locomotion. As Sam Kriegman states, these Xenobots can currently survive for one week without requiring external stimuli since they are created with their own reserves of fats, heart, and proteins which burn up after a week. Using an evolutionary algorithm the Xenobots can be developed further to last longer and be more accurately controlled. Xenobots are designed by a computer and take time to develop. Using Quantum Computers the time taken to execute the evolutionary algorithm reduces considerably. Instead of focusing on one configuration at a time, quantum computers can evaluate and execute multiple configurations simultaneously. This enables it to evaluate multiple of the billions of evolutionary stages. After much development, the Xenobots can be used to track cancer cells, clear plaque in the body, clear microplastics in the ocean, administer drugs to the body accurately. They can also be programmed to analyse and collect data in the body.

Mixed Reality technologies have seen significant development in the last decade. Microsoft Hololens, Google Lens, VR headsets- they all brought with them a new dimension. Like

² Entanglement : a physical phenomenon that occurs when multiple qubits are correlated with each other. It can have strange and useful consequences that could make quantum computers faster than classical computers.

³ Annealing : In simple words, it is the method of finding the least energy path to solving a problem

Augmented Reality is now available on mobile phones, Virtual Reality will also reach the stage where there are no headsets required to enter VR. As we experienced globally, when quarantined in your homes, it is necessary to have someone to talk to, express your thoughts and feelings to. VR can solve that by bringing virtual, intelligent people who humans can talk to and have a coherent conversation with.

How each part works individually

Here I list how each of these technologies will contribute towards Global Health Securities.

OpenMind is a conscious quantum brain. Deploying web crawlers, it will collect all freely available knowledge on the internet. It will then refine the collection of data by extracting the most useful information and then compiling it into its own module. As dictated by the foundation of quantum mechanics, the Schrodinger's Equation allows for accurate prediction of large data sets. What does this mean? It means that OpenMind will be able to sort and extract the most common information on a topic and be able to create a virtual learning resource out of it without the intervention of a human by using technologies such as Natural Language Processing (NLP). NLP is the technology that allows AI to coherently understand and use the human language, all 6,500 known languages, by analysing the language. This whole process is made possible because of qubits interacting with each other. To give an idea, a mere 30 qubits output 10 teraflops of processing power while a classical computer manages to output a few gigaflops. Google's Sycamore operates at 54 qubits and currently reigns supreme in the quantum computing realm. The compiled data can then be accessed through a mobile application. Furthermore, the OpenMind mobile application encourages global collaboration as discussed above.

Sam Kriegman, inventor of the Xenobot, states that to accurately mass produce Xenobots you will need a 4D printer. Essentially, stem cells move around so it is not jigsaw puzzles pieces you are joining together. Rather you are connecting live pieces and must take into account Time as a parameter to accurately join them. An evolutionary algorithm may lead to self reproducing Xenobots which will render the need for a 4D printer moot. Until that time comes we should use quantum computing to optimise the process of 4D printing to mass produce Xenobots. However, the reason to mass produce Xenobots is that they will have the sole function of analysing their environment and transmitting the data to a parent communicator. These special Xenobots, rather nanobots, will be encapsulated. After swallowing the capsules, the nanobots enter the bloodstream and carry out their functions. Combining this technology with Dr Li Qian's research in the use of stem cells to repair or regenerate organ tissues will allow the human immune system to ignore nanobots as foreign cells and not attack them. Furthermore, the use of artificial DNA strands for storage and theories for its use as processors put forth by Dr Manish Gupta will enable easier programming and functioning of the nanobots.

How do all they work together as a system

When the user first configures their parent communicator and intakes Biobots, information on their age, gender, ethnicity and known illnesses is input and stored in OpenMind. In developed areas the users will access OpenMind through the mobile application. In rural areas, once the OpenMind libraries start functioning, the staff will be in charge of ensuring that each person in the village signs up on OpenMind.

After that, the Biobots communicate with a local, portable communicator that is connected to OpenMind. Each of their analysis is uploaded to this communicator which transmits it further to OpenMind sorted by the following parameters : -

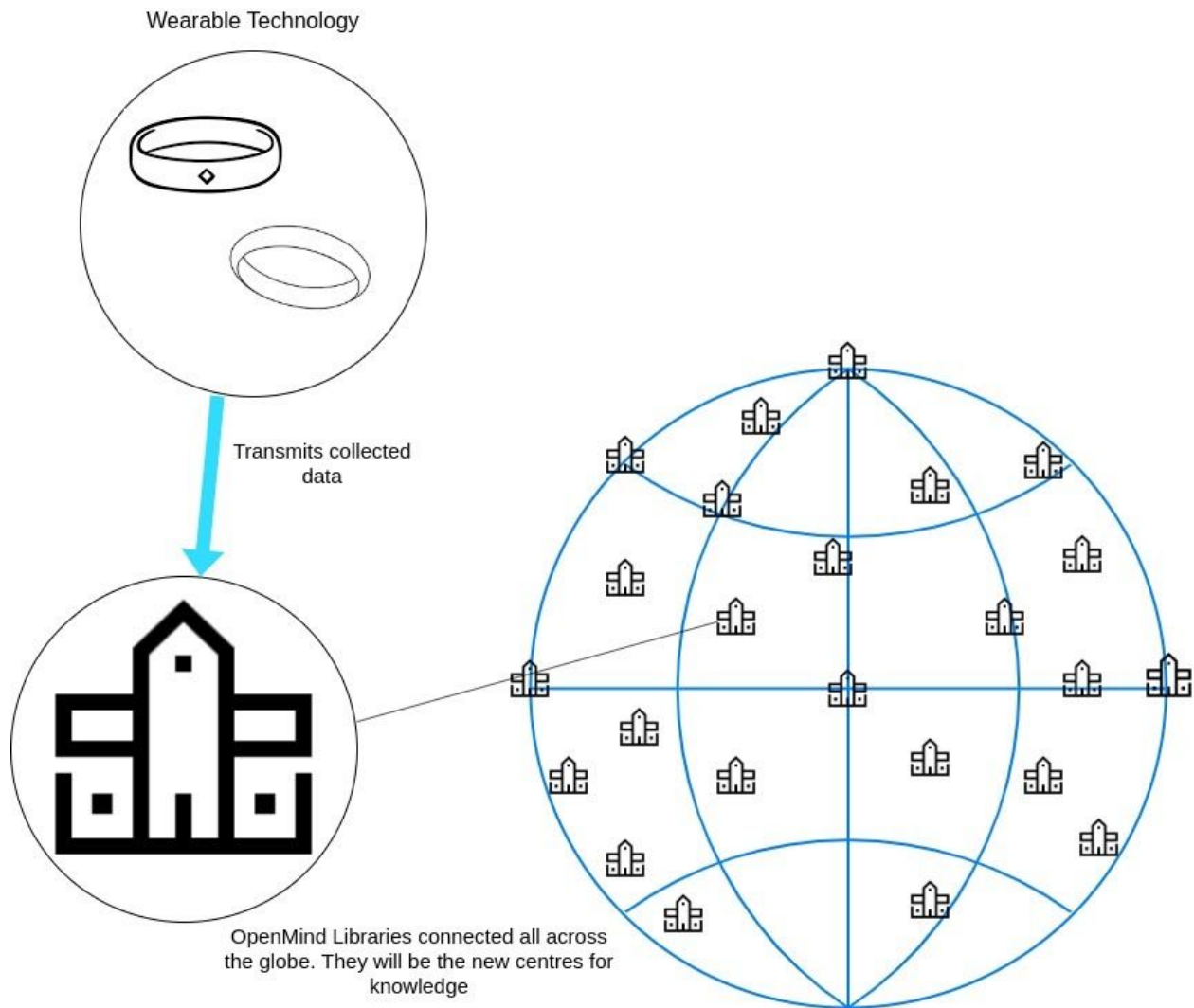
Age	Known Illnesses	Gender	Ethnicity	Different Mineral % in Blood (chromium, copper, fluoride, iodine, iron, manganese, molybdenum, selenium, and zinc)	Blood Oxygen%	Recorded observations of human body
Integer	String and user input	String	String	Floating Numbers	Floating Number	Video

All this data is then compared with other members in the same region and of the same gender. This helps in recognising which behaviours are maximum observed in that region so as to sort reactions of the human body into "normal" and "abnormal" reactions. Furthermore, over time it will allow the nanobots to analyse functioning of the body at the cellular level. This will prove extremely helpful in designing accurate virtual in vivo trials. To make OpenMind accessible to all, there will be OpenMind centres in remote locations that essentially act as modern day libraries. This will also promote development in remote, undeveloped areas by bringing knowledge- the key to rising up- to each citizen of the world.

The parent communicator mentioned above will be in the form of wearable technologies. Wearable technology has become extremely versatile so much so that the Internet of Things is now accessible through rings. [AINA Ring](#) is such an example. It will transmit data through the

internet connections that will be available through technologies such as [Starlink](#). This ensures that the Internet becomes ubiquitous therefore data transmission is extremely low cost thus affordable for all.

The parent communicators will be equipped with thermoelectric generators or TEGs and through the process of energy harvesting will power themselves using body heat. Moreover, if any “abnormal” reactions are found then the communicator will vibrate vigorously a number of times. The more serious the reaction the more number of times it will vibrate thus alerting the user. This is explained further in the next section.

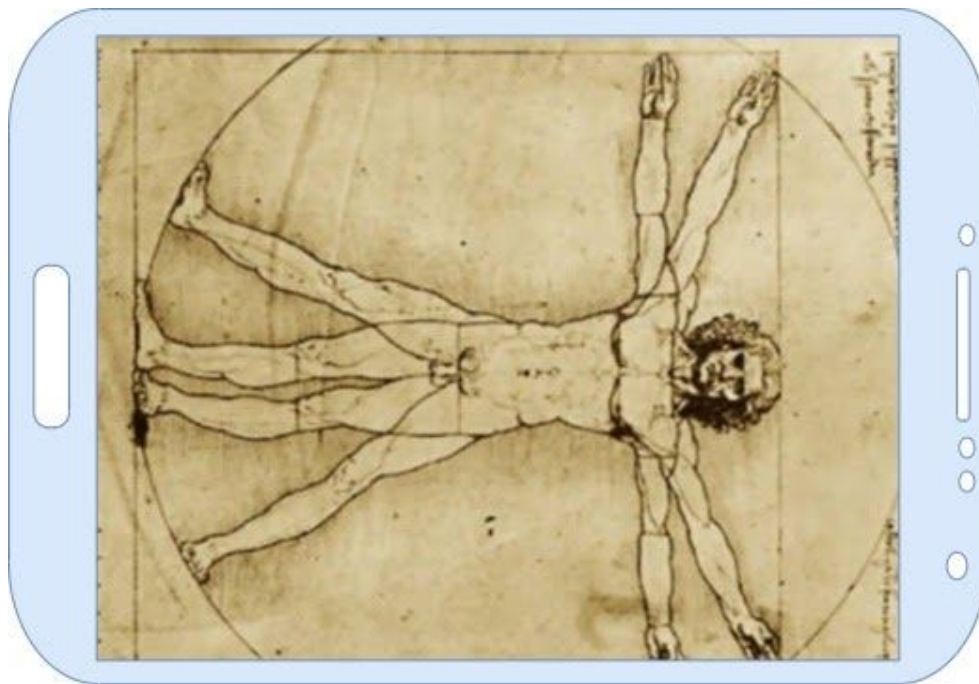


Furthermore, uploading research onto OpenMind will allow it to connect researchers to other researchers across the globe. If Sam Kriegman uploaded his research papers on Xenobots and its future development plans, OpenMind will analyse the research to create a summary of the document as well as identify the keywords. Then it suggests other people related to those keywords. So in the case of Xenobots, the keywords might be “nano”, “cellular”, “living robot”.

If Dr Li Qian has also uploaded her research on stem cells as cardiomyocytes then her keywords will be “fibroblasts”, “heart repair”, “programmable tissue”. OpenMind can then suggest both these researchers to each other by connecting “programmable tissue” and “living robot”. They can then talk to and collaborate with each other.

As VR becomes widely available and accessible through mobile phones, the OpenMind application will access that technology to project virtual avatars. They can act as tutors for learning modules as well as virtual people to whom users can talk to. The latter will help users to cope with mental illness providing an intelligent, emotionally intelligent, AI. The AI will already have access to resource material on the subject of psychology so will be trained and able to refrain from malpractice or saying something that might further harm the user.

Improving Global Health Security



OpenMind is the glue that brings all the above mentioned technologies together to cure future pandemics and improve global health security.

The data from nanobots will be the cause for accurate virtual, clinical, human trials. From the OpenMind application, researchers can access the human body at a cellular level and OpenMind creates a virtual simulation as shown below.

You can view the human body in VR using headsets and experiment on a virtual human through the OpenMind mobile application. Furthermore, using the power of quantum machine learning it will be possible to process, experiment and create with complex chemicals to cure diseases.

Apart from improving the rate of release of effective drugs, this improves precision and perfection of gene editing; it can also enable 3D printed personalised medicine for each dosage depending upon the factors reported by the OpenMind system. Using OpenMind, researchers on genetic engineering can connect and collaborate with each other. They can then perform virtual clinical trials to ensure safety of genetic engineering using OpenMind. Advancing in genetic engineering, we can perfect cloning, remove natural limitations for example editing human genes to make humans resistant to extreme temperatures similar to that of extremophiles or to enable limb regrowth similar to that of lizards.

As mentioned above, the parent communicator wearable technology will glow after sensing abnormal reactions. This is possible by using a small LED's inside the wearable parent communicator. Furthermore, the greater the adversity of the reaction the brighter the intensity of the glow there will be. The reactions will be on a scale of 0 to 5, 0 being the least worrisome and 5 requiring immediate medical attention. If it is major indigestion then there will be low glow, if it is a heart attack then a bright glow. Each level of glow will also transmit early warning to the nearest health centres and will ensure quick action towards health care.

OpenMind's ability to encourage open sharing of knowledge will be crucial in improving global health security.

The ancient knowledge of Yoga and the Vedas describes ancient yogis who had complete access and control of their brains were said to be able to levitate, walk on water, and meditate for years without requiring food or water (telekinesis). Most of this knowledge was passed on orally or the texts that contained them have been damaged. However, we can still collect all that data. According to Dr Ramesh C Gaur, there are over 5 million manuscripts containing knowledge of ancient Hindu texts in India. In addition, according to author Christopher C Doyle, there are over 30 million untranslated many more such manuscripts in India. Around the world, especially in India, some people know about these sciences and using OM we can access, collect and analyse the data to harvest relevant knowledge.

India - *often referred to as the global pharmacy of the world, supplies one third of global generic medicines* - has 5 different streams of knowledge on health systems viz. Ayurveda, Yoga, Unani, Siddha and Homeopathy - collectively called AYUSH. The official name of the Ministry of Health in the Government of the Republic of India is "Ministry of AYUSH". And they have recently started research to dive into and organise the knowledge of these ancient traditional health care systems, having some remarkable inventions like the invention of plastic surgery by the father of surgery, Sushruta, in 600 BCE. Similarly, other cultures too have their traditional healthcare systems viz. Greek, Egyptian, Chinese, Mayan.

OM will also enable us to detail the knowledge of ayurveda, the ancient Indian healing system, which contains cures for almost every illness known to man such as, but not limited to, mental illnesses, cardiac disorders, joint problems, dermatological problems, psychological disorders,

movement disorder. Compiling the knowledge of Yoga into a comprehensive and interactive virtual module will lead to spiritual healing thus preventing mental illnesses.

Furthermore, there may be some data which is incomplete but using data science and predictive analytics the quantum brain can predict the most likely fit by analysing ancient Mayan, Indus, Incan texts that may have contained similar knowledge since these civilisations did create complex architectures which could not have been done only with primitive tools.

Such rapid evolutions will unlock the world written in myths. Where gods who could use 100% of their mind, who could self heal, who could edit genes to create gods such as Lord Ganesha; they walked this Earth.

As we evolve with the technologies above we will realise that humanity has successfully started its journey on The God Path- the steps that humans need to take to surpass even Gods. Open Mind and my architecture can help us all set firmly on the God Path.

Barriers

Quantum capabilities : It has been theorised by Harvard University's Wyss Institute that 83 qubits will be required to simulate a single strand of DNA. Considering, OpenMind has to simulate multiple yet smaller pieces of the digital twin we can assume with at least 83 qubits the system will compute its base functions. The biggest barrier is significant time taken in linking and maintaining more qubits.

Xenobots : need to undergo evolutionary algorithms, integrating artificial DNA and editing their genetic code to evolve into Biobots. The main barrier here would be programming HSC and combining it with proteins and fats as its food reservoir and then mass producing them. They will also need to be made affordable.

The Internet of Sound has never been tested inside the human body (70% liquid). Though it works perfectly in liquids, we cannot assume it will function without first conducting tests.

The development of the wristband is less of a barrier as compared to the others since μ TEGs are already developed. The barriers presented would be developing Internet of Sound and Internet capabilities in it while creating a low cost wristband that is easily affordable for all.

Once the pilot is successful then the people will need to be convinced of intaking Biobots and connecting to OpenMind. Another barrier is convincing researchers that 100% accurate virtual in vivo will replace clinical trials completely not requiring a human to test on.

Overcoming Barriers

I plan to contact researchers in the areas of quantum computing and of Biohybrids to learn from them and bring the knowledge together-- acquiring the resources and tools needed to integrate both these technologies to create OpenMind.

Google's Sycamore already has 53 functioning qubits so we are already ahead of the halfway marker for base computations of OpenMind. To overcome this barrier I plan to use the time available until 83 qubits are reached to develop Biobots and their network with the wristband. After extensive testing using supercomputers, the Biobots and wristband network will simply need to connect to OpenMind to become a functioning neural network.

To mass produce Xenobots I plan to use quantum computer powered 4D printers that seal Biobots into patches.

To make the wristband affordable for all I plan to use Yaoguang Shi's design of his body heat powered wristband and increase manufacturing to achieve large economies of scale and lower cost.

To convince people of the safety of OMNNN I plan to share results of every test publicly and conduct installation processes publicly to showcase its safety along with partnering with banks and insurance companies to offer incentives of financial inclusion to the user. This is only possible once OpenMind is set up.

Financial Sustainability Action Plan

OpenMind Initiative is to be a for profit technology (B corp) which will facilitate the co-development of the technology, products and the back end for the partners to provide the products and services to the beneficiaries.

The target beneficiaries is the entire population of the world, and the only way they can be served is to make the endeavor sustainable. Wristbands given away free will not be used, and Biobots will be refused to be allowed to be intaken , unless beneficiaries see "value" in wearing the wristband and intake the Biobots, in exchange for the data they provide. And the beneficiaries will need to pay a token amount for the wristband so they wear and value it instead of taking it for granted.

I see this benefit to be "health inclusion" and "financial inclusion" that follow from the data they provide - on a consent basis to balance privacy concerns. The providers of these health and financial products and services would be potential partners viz. Healthcare provider entities, Financial sector entities (banks, insurers) while Governments and community leaders

would come together to frame rules of ethical engagement and provision of services & products. It is these partners who make the Biobots and wristbands affordable.

Please note that the anonymised data will be available for free to researchers across the globe for R&D purposes, since that is the core purpose of OpenMind.

In the initial phase of research and development of quantum technology, production of Biobots, wristbands, etc, I propose to approach potential partners (as stated below). This phase will be an investment phase, with "in-kind" capital raised from R&D partners in-form of facilities, people and resources in exchange for equity plus some grants. Once a Proof of Concept is demonstrated under lab conditions, patient capital from deep pocket venture entities would follow, to enable a pilot at scale. Commercial capital can follow a successful pilot at scale.

Financial sustainability and return on capital invested will emanate from the profit share derived from the providers of services (financial & healthcare entities).

Potential partners during the initial R&D phase :

1. Universities focusing on furthering quantum computers viz. Berkeley Quantum Lab, GeorgiaTech, UIUC and with initiative focused on organic nanotechnology viz. Tufts University and University of Vermont.
2. Companies creating quantum computers and their supporting ecosystems Google, Microsoft Azure, Rigetti, Honeywell, D-Wave Systems, Nokia Bell Labs. IBM's Q Experience is a valuable asset to OpenMind since it makes Quantum Computing open to all

For the initial development phase of OpenMind, the expenses would be incurred primarily for interfacing with the potential partner organisations and travel to discuss and establish partnerships for this phase. It is very difficult to estimate and put a number to the expenses at this stage.

Once the partnerships are established, the work of actual development of the 3 key components (viz. wristband, biobots, preparing the quantum computer) will need resources of talent, materials, cost of access to the quantum computer, etc to build and test models of evolution of the Biobots and the wristband. This could take 1-2 years of modelling and prototyping before being 4D printed.

The exact amount needed to finance these operations would be determined by the partners.