

# A Miracle for Over Euphemistic: Human 2.0

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**Abstract:** Human Augmentation focuses on creating cognitive and physical improvements as an integral part of body. Human Augmentation is a field of research that aims to enhance human abilities through medicine or technology. This has historically been achieved by consuming chemical substances that improve a selected ability or by installing Implants which require medical operations. Both of these methods of augmentation can be invasive an example is using active control systems to create limb prosthetics with characteristics exceeding the normal speed, flexibility, neurological stimulation in short overall performances. Human Augmentation has been designed to fulfill everyone's long lived desires to be faster, smarter and to build new abilities. Lately, augmented reality and multimodal interaction technologies have enabled non-invasive ways to augment human. We'll be reviewing the past, present, future of Human Augmentation, the replicating human ability and its examples. This is followed by a summary of existing work in augmented senses, action, and cognition. Our contribution to the future includes a model for wearable augmentation. In addition, we present a call for research to realize this vision. Then, we discuss future human abilities. Wearable technologies may act as mediators for Human Augmentation, in the same manner as eyeglasses once revolutionized human vision. Non-invasive and easy-to-use wearable extensions will enable lengthening the active life for aging citizens or supporting the full inclusion of people with special needs in society, but there are also potential problems [4].

**Keywords:** Artificial intelligence, Augment, Augmented action, Augmented cognition, Augmented senses, Cognitive enhancement, Human 2.0, Human expansion, Innovation, Revolutionized technology, Wearable.

## I. INTRODUCTION

Human 2.0 is generally used to refer technologies that enhance human performance that fulfills dreams of being a superhuman help in crime branches etc. by enhancing capabilities of a human body.

Past - Which has been passed and can never be turned Back!!

Present - Which we all maybe or maybe not utilizing properly!!

Future - Which we have to improve for better living!!

This can be improved by HUMAN AUGMENTATION.

What is Human Augmentation?

Is Augmentation or Enhancement the same?

Why Human Augmentation?

And many more queries proposed in this research paper!!

Augment would mean to go beyond the current human experience. Example to the above will be the ability of a deaf to hear, a human to fly. On the other half enhance would be to take an existing characteristic and make it better, example to this is a makeable man. Enhancement can be described as artificial or technological alteration to human body to achieve physical or mutual capabilities with the help of Artificial Intelligence. Human Augmentation is used to understand that technology serves human and will always do so. The core meaning of augmentation is to make things greater by adding to it.

Utilizing this system from a verifiable viewpoint, we see how almost every human mechanical innovation was intended to enlarge an essential shortcoming of people. Tools, vehicles and gadgets were introduced to reduce the work load on humans [1] [13].

Human Augmentation can be divided into 3 main principles:-

- *Augmented Senses*, are achieved by interpreting available multisensory information.
- *Augmented Action*, are achieved by sensing human actions.
- *Augmented Cognition*, is achieved by detecting human cognitive state.

Wearable interactive innovation is a fundamental segment which empowers human expansion. It offers a consistent reconciliation with the physical and advanced world around us.

Cross modal connection permits the attributes of one tactile methodology to be changed as upgrades for another. This can profit individuals with inabilities just as older disintegrating tangible capacities. In worldwide research, the theme has been

excited a lot of enthusiasm, as at present numerous research institution and companies (like MIT, Stanford University, Google Inc, Samsung Electronics Co. Ltd, the US Army etc.) are examining the possibilities for the developing field. Future employees would supervise autonomous systems, and workers would possess multifunctional skills and take more responsibility in the content of their work.

## II. AUGMENTED SENSE PAST AND PRESENT

The past of Human 2.0 started when people started admiring Marvels comics, movies etc. The desire of a human to be a super human was the initial stage of Human Augmentation. The division of Human Augmentation is in 3 categories namely Augmented Sense, Augmented Action, Augmented Cognition [9].

In general, augmented senses have been explored with 2 aims:-

- To help people with sensory deficits restore the ability to perceive a certain defective sensory modality by using the existing capabilities of a functional human sensory system.
- To extend the body's ability to serve aspects of the environment that are not normally perceivable. Augmented sense initially was a gesture based wearable computer system developed at MIT media lab by Steve Mann mostly were either to compensate for visual or auditory sense.

Example to the augmented senses is the Sixth Sense which was remarkable progress. It came into notice because the projector essentially turned any surface into an interactive screen. Essentially, the device worked by using the camera and mirror to examine the surrounding world, feeding that image to the phone (which processed the image, gathered GPS coordinates and pulled data from the Internet), and then projected information from the projector onto the surface in front of the user, whether a wrist, a wall, or even a person [7] [3]. Because the user was wearing the camera on his chest, Sixth Sense augmented whatever he looked at; for example, if he picked up a can of soup in a grocery store, Sixth Sense found and projected onto the soup information about its ingredients, price, nutritional value — even customer reviews.

Sensory substitutions included braille or speech synthesizers too in which visual information was transformed into touch or hearing modes another past invention very useful was walking canes which were used to transmit surface profile, roughness and elasticity to the hand to assist visually impaired with navigation.

## III. AUGMENTED ACTION PAST AND PRESENT

The earliest instances of expanding human activity were identified with movement increase. For example, prosthetic

limbs re-established a portion of the capacities of a severed limb. As of late, new computerized advancement have empowered increasing activity in manners that go past common human engine and tactile breaking points. For example, Exoskeletons empower incapacitated individuals to scroll on automated feet.

Exoskeletons and double arm power amplification arrangement are valuable in a scope of tasks that are customarily done by people however can't yet be completed automated because they require human intelligence. The idea of an exoskeleton can be enlarged out to virtual exoskeleton where a robot is placed in a remote area and it works according to client's movements [5].

It is likewise possible to use other information techniques like gestures, gaze and speech to augment human activities in VR or in machine control. Also signal base expanded development regularly triggers a marvel named as "MIDAS CONTACT ISSUE". This means that user accidentally makes choices and confirmation.

For example:-

- The game Pokémon Go, we had seen augmented reality action in real life. This versatile game made its client to see their general surrounding through their cell phones cameras while anticipating game things.
- The US Army force, for instance utilizes AR action devices to make carefully improved preparing missions for officers. Military named gave an official name to a program "Manufactured Preparing Condition, or STE". Wearable glasses and headsets may well help futuristic armies process data overload at incredible speeds, helping commander make better front-line choices on the fly [14].

## IV. AUGMENTED COGNITION PAST AND PRESENT

Augmented Cognition is a type of human-innovation association where a tight coupling between a client and a PC is accomplished by means of physiological and neurophysiological detecting of the client's subjective state. Increased eruption coordinates data distinguished from the client to adjust PC contribution to coordinate the client's situational needs.

Earlier, augmented has been a multi-disciplinary field of research joining skills from cognitive psychology, neuroscience, computer science, engineering and HCI. The ultimate objective of the examination is to stretch out the clients subjective capacities and to consistently make a working augmented perception that can without much of a stretch be utilized to survive and oblige bottlenecks; restrictions and information processing chain contend that increased discernment can bolster human data handling identified with tangible memory, working memory, consideration and official capacity.

Expanded subjective capacities incorporate broadened memory and for all intents and purposes boundless information. This can

be accomplished by utilizing an in operated system to empower expanded cognition. Increased comprehension has just been utilized to screen one's wellbeing, help patients suffering from gentle cerebrum wounds and improving learning and memory.

Wearable sensors can measure for instance, electroencephalography facial muscle action or sweat gland. These estimates can be utilized to distinguish one part of intellectual state like remaining burden or confusion reliably [6].

At last, one long term objective in human innovation association is to utilize the information on human insight to manufacture machines that can think like people. These frameworks likewise have the upside of repeating human reasoning and in this way really extending human perception.

## V. REPLICATING HUMAN ABILITY

In February 2016 we saw the principal live attempt of this when a HANSON ROBOTICS launched first AI based social humanoid robot called SOPHIA. It was a decent attempt; however simulated intelligence is still a long way from its last goal. All things considered, how about we attempt to make sense of how far is man-made intelligence from that goal.

There are five basic senses touch, sight, hearing, smell and taste. Among these five senses SOPHIA has tried to replicate two of them which are sight and hearing.

It is so natural for us to distinguish an object example a door, an apple, a vehicle etc. But when we advise a machine to do a similar undertaking, we understand the difficulty. All things are considered luckily and investigation is going on it from quite a while and artificial intelligence has come ahead on it. Truth be told, we had begun out an extra-extraordinary term for this very assignment of "Machine understanding picture". For example, PC vision.

Each large tech monster is chipping away at their own ways to answer and calculate.

Examples:-

- **Bare Prosthetics:** An organization that makes custom hand prosthetics for people who have had their fingers cut off or grow up with this kind of disability. They are one of the primary finger prosthetics producers to provide their clients with incredibly significant levels of ability.
- **Sight:** A wearable gadget like glasses that legitimately provide people the capacity to see their condition. The gadget has cameras on front that take in the earth in close eye quality and show it on a screen that sits directly before the wearer's eye [2].
- **Motion Savvy:** A stage that makes an interpretation of gesture-based communication into discourse and

discourse in communication via gestures, going about as an individual interpreter for hard of hearing individuals.

- **Cochlear Inserts:** It is one of the principal organizations to grow such an item, that re-establishes hearing without requiring an outside hearing gadget to be worn.
- **Bioprinting:** The way toward making natural tissues, organs, bones, skin and so on utilizing 3D printing system. While this innovation is still in its soonest organizes it and can possibly totally re-classify the therapeutic business.

## VI. AUGMENTED SENSES FUTURE

The beginning stage is that the innovation will improve human capacities straight forwardly not through an outer instrument that controlled through an interface. Cooperation ought to be as near real human activity as could reasonably be expected, which prompts a requirement for following human activities utilizes as contributions for the growth framework.

The proposal empowering advances for wearable expansion are as per the following:-

- **Sensing** advances recognize nature, items and occasions. These incorporate example acknowledgement and other PC vision techniques, sound related sensors, spatial, warm and development sensors, multi phantom cameras and contact and gustatory sensors.
- **Multisensory** introduction innovation support attention, memory and observation it is accomplished through light weight multimodal blended reality glasses, cross modal data introduction and wearable embellishments. It applies different human detects, sights, hearing, contact, gustation as channels to intervene expanded detecting and criticism on augmented activities [2].
- **Human Movement Estimation** advances depend on different wearable sensors. Human exercises are perceived as contributions through for instance distance acknowledgement, engine movement following, eye tracking, and power and contact input. In view of this low-level data, human activities are demonstrated at a more significant level.
- **Actuation Innovations** are utilized to affect the earth as coordinated by the human. These incorporate different sorts of visual presentation, sound gear, haptic actuators just as well as smell and taste generators. In vivid situations additionally the feeling of parity might be affected by the age of power and human posture. Augmented human is another user interface paradigm, which combines and grows a considerable lot of the old ideal models. Various sensors and cloud information give data, artificial insight filters it and it is exhibited in straight forward manners to help human in a timely

manner. Physical apparatus or robots empower activity in and changes to the earth.

## VII. AUGMENTED ACTION FUTURE

Augmented Human is as of now being acknowledged, bit by bit. It is getting better, smaller, and less expensive en-route. All things being equal, the vision of wearable Human Augmentation is still to a great extent hidden, regardless of whether many required bits of innovation as of now exist. It draws components from fields, for example, AR, VR, ubiquitous computing, AI, and detecting innovations, yet consolidates them and takes them a lot further [8]. Practically speaking, the research being proposed will expand on set up investigation into cooperation innovations. Understanding the vision will require investigate in any event in the following areas:-

- *Paradigm:* Define a general collaboration worldview and analogies that empower to benefit from increased facilities, activity and psychological capacities. This change in perspective will require liberal exploratory research in human-innovation cooperation.
- *Technology:* Lead research on detecting and activation advancements, cross modal introduction of data, artificial intelligence, setting demonstrating, and combination of multimodal and multisensory data.
- *Experimental Research:* Direct test fundamental research on how people can use augmented action: approving the worldview, allegories, cooperation strategies, and data introduction techniques being utilized.
- *Theory and Models:* Build a reason for theory on wearable human growth dependent on experimental research. Model different parts of augmented action. Model elements of applying these advances in intuitive frameworks.
- *Ethics and Societal Research:* Study what it implies that people evolve through increase technologies. Incorporates moral angles identified with the accessibility and utilization of such advancements, for example, worries for equality, misuse, and unfair competitive advantage.

Mentalities towards Human Augmentation should be considered to fabricate growth innovation that is acknowledged both by society and people.

## VIII. AUGMENTED COGNITION FUTURE

An ongoing overview on attitudes of mind towards human improvement innovations situated different technologies along a five-step continuum of use:-

- Helpful use to re-establish capacity.

- Avoidance when there is a known hazard or applicable family ancestry.
- Anticipation when no known hazard or family ancestry is evident.
- Upgrade past the capacity one would regularly have.
- Improvement enormously past ordinary. The outcomes indicated that 95% of respondents upheld physical remedial applications.

Innovative guides for people with lower limits because old enough or sickness would fill in as a basic help component guaranteeing that the weakening of facilities doesn't constrain the capacity to work in the general public.

As disability rates increment with age, there is a pressing need to find better approaches to adapt with and fight against age-related inabilities. The proposed human expansion can conceivably push the retirement age further and empower better and longer autonomous living. It ought to be noticed that innovative growth doesn't take care everything being equal; individuals despite everything need to deal with their physical and mental prosperity by eating clean, practicing and resting.

The augmentation ought to really feel like a piece of the client's normal capacities dislike specialized devices. It ought not require the client to wear innovation or perform activities that vibrate awkward or look bizarre to observers. There are additionally mental elements that may impede the selection or adherence to innovative guides. For instance, the confidence of working the innovation yields higher inspiration to proceed with use, featuring the significance of learn capacity, convenience, and feeling of being in charge. Clearly, the technology doesn't come without cost. The benefits need to surpass the expenses – the financial costs as well as the extra effort that accompanies picking up, utilizing and keeping up the innovation. Regardless of whether individuals are anxious to evaluate new innovation, it doesn't ensure long haul appropriation.

Sensation augmentation can make up for the missing vibe of numbness and help in forestalling pressure injuries, or it might improve encounters with phenomenal sentiments. Increased faculties may likewise enhance compassion by imitating others' encounters [11]. Psychological growth with life logging gives the genuinely necessary memory support for individuals with dementia, but can likewise be helpful for any bustling resident who acknowledges the capacity to review occasions and exercises in their own life. Additionally, the earth and encompassing items can go about as intelligent go between for the enlarged faculties and activity. A mobile stick could "see" the earth and may in this way help to explore an individual with falling apart vision. Sensors in a vehicle may act like an outer skin that enlarges the driver's feeling of the earth, and increase the driving, for instance, by haptic criticism.

Under 35% of the respondents supported boosting of execution with interventions proposed only for upgrading a physical or subjective capacity. The principle reason was that such innovation presents a few moral and cultural issues. For instance, as Bavelier *et al.* call attention to, enlarged vision or more prominent subjective capacities could be valuable for a war fighter later on [12].

## IX. CONCLUSION

Human Augmentation technologies are mainly used restoratively following an accident, illness or handicap of birth. Humans have always been struggling to improve their abilities everyone for once wants to be called a superhero. Human enhancement technologies are opening up tremendous new possibilities. There are several intellectual traditions contributing to modern forms of HA. This need or the dream to evolve has shaped development and has changed with a question always raising about what it means to be human. Gradually human evolution may soon take a backseat as human beings take control of their own future as the fields are growing like artificial intelligence, Human Augmentation etc. We as a species are now more capable of enhancing and augmenting ourselves which was next to impossible back then. The need to be stronger, faster, and smarter has contributed to a vast number of scientific developments. Recent advances in mediated environments, computation, and biological measurement is finally allowing us to realize the cyborg model of human-technology interaction. A large number of technologies from gene therapy to exoskeleton attachments and from brain-computer interfaces to having the entire global repository of information at one's fingertips formerly known as sixth sense can soon enhance and augment ones abilities. Some of these technologies are still in their period of growth and need to mature over time. However, many technologies can already be integrated to augment core human abilities. At the moment, most of these technologies are used independently with no fusion or a very little. As reviewed, creating an integrated, intelligent wearable system is the next necessary step in the development of augmenting abilities. This advancement will one day be the fundamental meaning of being human. However, due to ethical issues related to such augmentation, regulation as well as international standards and guidelines are essential for ensuring privacy, universal access etc. to such technologies. Augmentation technology should not only enhance the well-being and quality of life of an individual but also have positive effects on the community and society. Human Augmentation is one of the fields where recent advancements have a clear capacity for making this a reality. Wearable augmentation technologies and related interaction methods provide an excellent opportunity to realize the possibilities enabled by modern science and technology, benefiting humanity in a way it was never done before.

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