IMAGE CONTAMINATION OF FLORIAN JOMAIN **NETWORKED BODIES RIETVELD ACADEMIE, 2015**

SURRENDER:

Over time, the ontology of images has undergone a number of radical transformations. Facilitated by the democratization of efficient image-production devices, the total amount of images in circulation has been growing exponentially for a few decades now, reaching about two billion image uploads to the internet every day. The soaring number of images in circulation participates to the progressive and inevitable decay of the aura of images. Technological development makes it easier to reproduce and circulate images; their iconic power is consequently weakened. A debate has naturally emerged about the repercussions of the overload of imagery on our lives and our bodies.

The general feeling is one of saturation and fatigue. These terms come recurrently within the context of meta-modern discourse: after the human-centered positivist optimism of modernism and the resigned cynicism of post-modernism comes a time of synthesis, where characters oscillate between hope and despair, trust and weariness. A majority feels overwhelmed by their impotency to face the speed of the world these days. Images, as primary vehicles of neoliberal ideals, circulate and accumulate at such pace that humankind has little choice but to feel dizzy and disoriented. This is the feeling of "fatigue" or "disgust" many have been writing about.

In order to understand the existence of images in this networked environment, we need to investigate how images indiscriminately oscillate between physical and virtual forms and the type of relation they enter with bodies in our digital ecosystem. Both terms "image" and "body" require clear definitions so as to become actionable objects of study. First, an "image" can be defined as a "quantum of visual content that can assume a variety of formats"³. It exists indiscriminately in physical or in virtual form. Since the digital image is infinitely reproducible, any image can potentially exist in an infinity of versions. Second, the term "body" signifies any thing or entity there is, such as an atom, an animal, a human body, any object or organization. Any entity that is bound as a unit is a body regardless of scale. Here I will refer to the human body when talking about "bodies", unless stated otherwise.

A few questions naturally arise: how do images live and spread on networks as dematerialized entities? How do human bodies and images cohabit and interact? What are the implications of a deeper integration of images within human bodies? And last, what is the role of the image-maker in this reconfigured context?

DEMATERIALIZED IMAGES A reading of the contemporary image needs to consider the image in both its forms, physical and virtual. Indeed, images exist indiscriminately in both states and it is necessary to take this element into account in order to go on about exhaustively studying the ontology of images. At first sight, the two terms "virtual" and "physical" seem to be mutually exclusive, the "virtual" being by definition that which we cannot physically alter or experience. Images live in a liminal space between idea and matter, somehow set apart from us. The materiality seems to be of another order. Indeed, the being of a virtual object cannot be explained only by its manifestation, its representation on a screen. The digital object certainly has a physical existence, it exists first and foremost as a series of electrical impulses happening in a set of electronic components. One could for instance wonder: what happens when you delete data from a computer? The deleted information is rendered invisible and available to be overwritten by a next set of information. But physically, the data is still present until it is overwritten. It becomes a sort of ghost data but still lives in the physical world. Digital data has a materiality of its own, but it is made to fit our model of understanding so that we understand and relate to it organically.

Digital images inhabit a world separate from ours - the virtual world - ruled by uncertainty and transience. Their physical properties can never be known. Because of their dematerialized quality, digital images can take an infinity of possible versions when they materialize. The act of observation of an image only corresponds to the fixation of a visual element in a definite state for a certain moment of time. This means that when

we look at an image, we will actually only be looking at one of the infinite possibilities of materialization of this particular image. The infinite number of other versions of the image will never materialize and remain pure potentiality. Those images will never come into being and be seen, they are the invisible, dark matter of the virtual space.

The necessity for an image to materialize on a physical medium has become irrelevant. A group of artists called the post-conceptuals - Wade Guyton, Seth Price, Kelley Walker among others - have engaged into a questioning of the concept of mediality in order to detach the image from its carrier medium. Following the positions of conceptual art, where the ideas informing the artwork would take precedence over more material concerns, post-conceptual art came to question the materiality of the art object itself, as it became increasingly ephemeral and intangible. This resulted in a more malleable idea of the art object and a progressive renouncement to the necessity of its materiality. As it is seen more and more, artworks often only exist as digital images presented in a digital space. This idea is also what was possibly touched upon in the 1995 exhibition Formless curated by Rosalind Krauss and Yve-Alain Bois4 at Centre Pompidou in Paris. There, the traditional modernist form-content distinction was unfolded in order to introduce the notion of the Bataillean "formless", a slippage out of the modernist distinction into a new frame where form and content are one, where matter becomes the only subject of itself. Images have become "formless" objects, whose undefined materiality now adapts to the type and the reach of the content it depicts.

These aforementioned artistic strategies share certain characteristics with gestures of iconoclasm. Historically, the iconoclasts are those who would perform an act of destruction onto a religious representation of a divinity which they would consider idolatrous, attacking the medium in order to destroy the image, trying to render it powerless. But the destroyed image usually acted as a symbol of oppression more than it was destroyed, and the iconoclastic gesture therefore reinforced the power of the original image bearing the scars of its aggression. Contemporary writers, such as Bruno Latour⁵ or Sven Lütticken⁶, advance that the most radical form of iconoclasm is now the movement of extraction of an image from its context. Extracting an image from the "flow of images", thus cutting all references to its possible meanings, deprives it from its power of signification and turns it into a mute, meaningless image. Their view offers an alternative to a purely material approach to iconoclasm and now offers the possibility of an iconoclasm performed onto dematerialized images.

IMAGES AND BODIES In Anthropology of Images7, Hans Belting develops a progressive reading of the concept of "mediality" of images in contemporary times their relationship to their physical medium. Traditionally, we conceive the moment of perception as follows: an external onlooker is observing an image carried by a medium, which together form a picture. Belting proposes to introduce a third parameter in the image-medium equation, namely that of the human body, postulating that the original image-medium tandem is not enough to grasp the complexity of our relationship to images. For him, in the act of perception, the role of the body is both that of an active creator of mental images as well as that of a physical medium, a place for images to form. It affirms that images would not exist without a living body, a physical brain chemically creating thoughts through synaptic exchange. Just like in the aforementioned strategies of iconoclasm, the necessary detachment of an image from its medium is reinforced here, in that Belting desacralizes the function of the medium, "for in reality it is not the medium but the spectator who engenders the image within his or her self"8, therefore acting as activator of images through mental constructions - dreams and imagination - or cultural associations - knowledge. Besides being a locus for mental images to materialize, the body can literally take the role of carrier of images, as seen in skin decoration, facial tattoos or masks.

they do so, leaving traces and memories as they vanish. Bodies are transformed in the scope of their relationship with images. Belting opposes therefore the idea of a totally disembodied image, circulating freely at unlimited speed on nonphysical supports. For him, an image is always already physical, and even the memory of an image has a certain physicality carried within the human brain.

NETWORKS As an object of study, the network does not only stand for the dematerialized space in which most of today's exchanges and interactions happen, i.e. the internet. It designates an interconnected system whose entities relate to each other in an infinite number of ways. The actor-network theory, partially developed and popularized by philosopher and epistemologist Bruno Latour⁹, has come to prominence within academic discourse since the late 1980s. To put it briefly, it explains how networks come together and how they act. They are composed of an ensemble of human and non-human actors - also called actants - who allow the network to take shape according to the set of relations they enter with each other. All actors - human bodies, animal bodies, technology, the environment, etc. - are considered equal in their potency to act. This is the key interest of the actor-network theory and the reason why it will prove useful in the present analysis. It allows for a flattening of the classical humanobject hierarchical relationship, enabling an inclusion of the power of objects into cultural analysis. In this case, I aim at empowering images in their relationship towards humans. This is probably the reason why in this text, images might appear animated to some extent, endowed with a will of their own. I do not consider images to be conscious entities, but I think - and the actor-network theory requires such a conceptual openness - that inorganic beings have a strong influence on their environment and that in certain contexts, they can adopt the behavioural patterns of organic beings.

This said, what kind of interactions do the various actors of the network enter into? They "translate" the will of the majority of actors and they repeatedly perform their existence in the network so that it manages to sustain itself. The network thus takes everchanging configurations, according to the pool of actions, which are happening within the network itself - the so-called *intra-actions*. As a consequence, the disappearance of one element of the network endangers the entire network, which needs to reconfigure and adapt. It therefore always represents the voice of the majority and the most current state of affairs.

BODIES IN NETWORKS The classical notion of the body has to be deconstructed in order to fit in the context of the network as explained above. The body is traditionally conceived as an autonomous system which has to remain hermetic to its outside environment in order to sustain itself. This conception comes from centuries of anthropocentric domination and the modernist assumption of an ever increasing progress driven by the mind's domination of nature. The body is sacralized more than any other thing of nature.

In her essay *States of Suspension: Trans-corporeality at Sea*¹⁰, Stacy Alaimo breaks the classical assumptions existing around the notion of the body. She dissolves the boundaries of the body and liquefies it into its environment. The main concept she introduces is that of *trans-corporeality*, which she defines as the "ensemble of connections and interchanges between bodies and environments"¹¹. It shines a new light onto the human body, as substantially and perpetually interconnected with the flows of substances and the agency of the infinite number of actants of its environment. Her theory clearly relies on a conception of object-agency similar to that of Latour in the actor-network theory. In her view, the body is a porous system¹², permeable to its outer environment. It is no longer a sealed-off autonomous entity. Its skin becomes a membrane, a simple container of organs, which marks the limit between the inside and the outside of the body. It contains and lets substances pass in and out, the latter leaving traces of their passage onto the bodily matter they interact with. The porosity

of Alaimo's body might even be the very condition of the being of bodies, for "without porosity, bodies would evaporate into a multitude of discrete entities". 13

In his 1985 exhibition *Les Immatériaux*, Jean-François Lyotard already questioned the cohesion of the body. Addressing the increasing pervasiveness of machines within human life and the subsequent dematerialization of their relationship to reality, he identified the emerging dissolution of the boundaries existing between human bodies and their environment. It seems that the dissolution of the limits of the body was already inscribed within the premises of post-modernism, as if the striving for individuality so characteristic to this moment in time was unsustainable for the human body conceived as autonomous. In immaterial conditions, bodies cannot cope with the external pressure of the forces of the universe - and of society at large -, they need a certain airiness and porosity in order to remain whole.

The notion of the body Alaimo proposes, interconnected with every actor of its network of interactions, is forcing us to reconsider the classical modernist notion of the human body. Our networked porous body exists in a state beyond human. It becomes "post-human" and turns into a receptor of information, as soon as it entangles with its dynamic environment.

IMAGES IN NETWORKED BODIESAnalyzed within this conceptual framework, how are images perceived and what is the nature of their interactions with bodies? Let us consider the act of observation of one image by one spectator. To refer to Belting's approach, the image and the body of the spectator enter into a reciprocal relationship in order to create meaning. During the moment of observation, other actants belonging to the same network come into play, such as cultural or historical references, enabling the spectator to make sense of the image it sees. Take another image, or another spectator for this matter, and the body-image network formed during the moment of observation will be reconfigured, for both the body-actant and the image-actant will come with a different pool of particular sub-actants, subsequently creating a new set of meanings. If we extend the body-image network to a wider number of bodies and images, the same principles apply, with a higher number of actants. Images and bodies form a networked ensemble of actants, all correlated and interacting with each other.

In the act of perception, bodies assimilate images, as advanced by Belting. According to him, visual information is transformed by its assimilation in a body during the act of perception. It becomes memory, and it is subject to a constant subjective recreation every time it is reactivated by the brain. This conception matches that of Stacy Alaimo's trans-corporeal body. Indeed, every visual information passes through the body, it is processed by the "body-machine" as part of the whole. The body, a network composed of an infinity of cells, particles, memories, desires, and images, reconfigures during every new act of perception. Images leave physical traces onto the body matter in the form of electrical synaptic impulses. Every act of perception induces a memory, which is "encoded" and "stored" via means of electrical and chemical reactions happening inside the brain. That is the reason why I postulate a transformation of the body during every new act of perception. The physical nature of the interaction transforms the matter of the body and as the laws of evolution predict, it is only a short step to imagining that images might have an impact onto which direction humankind evolves as a species.

In her essay *When Species Meet*¹⁴, Donna Haraway explains that all species evolve in concordance to each other. As a case study, she analyses the mutual influence that dogs and human beings have exercised onto each other in their respective developments: they would not have evolved in the way they have if it were not for the other. She shows here that "all actors become who they are in the dance of relating." ¹⁵ In our case, the relating of images and bodies influences the direction of the evolution

of mankind, adapting it to the assimilation of considerable amounts of visual data. For instance, it is easy to affirm that the way we acquire visual information has evolved over generations. Our eyes now browse and scan, they do not fix and focus. In the current situation of acceleration of image production, bodies must adapt to visual overload. Our attention spans have become shorter and shorter, as we have to deal with an increasing number of visual elements, which our brains could not possibly all consider. Our bodies must develop defense mechanisms against the too-much of the network, reducing the intensity of their attention to visual stimuli, permanently altering their very structure in the process.

Technology has already changed the way we act and perceive. Toddlers swiping through magazine pages as they would on an iPad;¹6 terrified kids navigating the virtual worlds of video games;¹7 astonished adults being exposed to first examples of immersive 3D porn video: all show that the future of imaging technologies, going in the direction of *mixed reality*¹8 – a world where real and virtual objects co-exist and can causally influence each other –, will durably change the core of our perception of images. Not long before the widespread introduction to the mass-market of immersive devices such as Oculus Rift or Windows' HoloLens, the unrest preceding an upcoming imaging revolution can be felt more than ever. Online videos of users testing these devices appear in ever greater numbers, and the forums dealing with these technological advances all show the excitement and fear surrounding their commercial release. Headsets will soon be colonizing skulls, and it could be not so long before these devices permanently penetrate our bodies, enter our brains, in a last move before the complete merger of body and technology.

THE SUBJUGATION OF BODIES The development of new technologies tends to reconfigure the agency relationship existing between images and bodies. As mentioned previously, in the context of networks, images can have a direct influence onto their environment. In After Art, David Joselit goes further by stating that, on networks, images can acquire a "swarm-like" behaviour. Their tendency to regroup is due to the fact that their power as images is increased when they inter-connect. Once again, images do not act according to a sort of free will they would possess, but the network in which they exist tends towards maximum efficiency, and images regroup in order to fulfill the full potential of their network. It is for this reason that Joselit introduces the concept of image-power. it corresponds to an apprehension of images as commodities. Indeed, images act as undifferentiated carriers of information - the normative .jpeg file format - and evolve in the absolute freedom of the neoliberal market. Their existence and perpetuation therefore only depends on their capacity to draw attention and to rack up views and likes. Networks create a favorable terrain for images to connect to each other and their power is increased through repetition and reposting, when a network synchronizes around what is considered a "powerful image", as would birds or fishes in a flock. For example, the microblogging platform Tumblr relies on this connectivity of images with a system of likes and reblogs and the possibility to follow other users in order to expand one's network. The more an image receives likes and is reblogged, the faster its speed of circulation and the stronger its image-power. For Joselit, the content of an image has now been completely replaced as the purveyor of value of an image and "it is now saturation through mass circulation that produces value in and through images."19 Buzz has permanently replaced aura.

The tendency of images to swarm and the processes of bodily image assimilation as seen with Belting happening during the act of perception both reinforce the subjugation of bodies to the stream of images they encounter. As mentioned before, when an image is perceived by an onlooker, a mental image is created, leaving traces onto its bodily matter. The same phenomenon occurs when that same image comes in contact with another body during yet another act of perception. Images' trajectories therefore resemble that of parasites: they rely upon the presence of an organism in order to exist, materialize and sustain themselves. Without the presence of bodies for them to take

shape, images would stay mute, invisible. They circulate on virtual networks and they have to contaminate an extensive number of physical bodies in order to thrive.

Proliferation and contamination are biological terms, usually attached to living organisms. Proliferation stands for the scission, separation and subsequent multiplication of a form. Contamination refers to the accidental introduction of a foreign element into a living body. Due to their dematerialized qualities in digital format and their infinite reproducibility - copy, paste, print -, images proliferate easily on networks. The more they are seen and interact with bodies, the more they will spread and appear at other nodal points of other networks. When they encounter a body, images contaminate its whole system of perception. Indeed, seeing an image changes the way we consider the images we know or the images we will be exposed to in the future. Our tastes and preferences are shaped by what we see. Let us take the example of advertising imagery: consumers spontaneously associate brands to specific pictures or logos, with no necessary mention of the name of the brand. The advertising image material, after having been presented to consumers, changes their reading of all images to follow. For instance, the artists of the Pictures Generation - most notoriously Richard Prince or Cindy Sherman - play on the embodied knowledge and assumptions that we associate with standard advertising and film imagery. More recently, the artist Timur Si-Qin also used the existence of these embodied collective images in his work Premier Machinic Funerary Part Il²⁰. He uses large-scale black and white photographs of stripped athletes usually associated with the advertising material of brands like Abercrombie & Fitch or Calvin Klein. The whole set of references traditionally associated to these brands - an apology of the attractive successful American and the looming failure of the neoliberal model in which it thrives - is consequently injected into the artwork with no reference to the origin of the appropriated image material. Since our behavioural patterns change upon their encounter with images, it is easy to assume that the networks around our bodies are reconfigured for every new act of perception we experience.

It is now only a short stretch before we start imagining a future where images would overrun bodies. Belting already expressed a similar concern when he wrote that "images colonize our bodies, our brains, so that even if it seems that we are in charge of generating them, it is in fact the images that are in control."²¹ The speed at which processes of contamination occur increases exponentially, as more images contaminate more networked bodies. Life-size curved 3D TV sets are entering consumer markets. Images taking form on their gigantic high-resolution surfaces literally invade the field of vision of the spectator, surrounding him with billions of pixels. The eyes cannot look away. The acceleration of the proliferation of images and their increasing potency create a legitimate fear within humankind to see its freedom diminished and to lose control over itself. It has become common for people to suffer from a saturation of mercury in certain parts of the world, through the ingestion of polluted fish. Can we now imagine the possibility of a bodily saturation through images? Can we reach a tipping point after which the brain would need to erase memories and limit information processing in order to store and create new information?

SURRENDER The redistribution of the power relations between images and bodies has been fully embraced by some, who seem to willingly surrender to image saturation. The popular Japanese phenomenon of *animegao kigurumi* sees individuals turning themselves into image-like figures. They wear latex max reproducing the doll-like features of the fictional characters they embody, but most interestingly, they also wear skin-like spandex outfits, almost invisible to the eye, which aims at erasing all the characteristic features of human skin, such as hairs, spots and veins. The general shape and physical attributes of the human figure are kept and emphasized - eyes, smile, hair -, but the texture of the skin is smoothened out, abstracted, as if the body was already accepting its function as image. Most photographs show these characters casually performing daily activities. The visual discrepancy between the mask, belonging to the realm of the digital animation movie, and the mundane outfits and settings where those pictures are usually taken - on the bus, in the restaurant, supermarket, etc. -

has the most uncanny effect. Looking at these images, it feels as if these ever-smiling characters were slowly invading reality, as if the virtual was starting to merge with the physical under the guise of animated images. As shown in Jon Rafman's video *Still Life (Betamale)*²², these animated figures tend to become highly sexualized objects, lasciviously dancing in the bare settings of porn chatrooms. Mortal bodies as objects of desire are being replaced by "image-bodies", as those leave a wider space for erotic fantasy. In the case of *animegao kigurimi*, the body becomes more than a medium carrying images, it literally tries to become the image itself. It is not surprising that the most popular pop-star in Japan, Hatsune Miku, is a computerized hologram with a synthetic voice. She fills opera houses around the world, with crowds of excited fans lipsynching to her songs and reproducing her choreographed movements. The adoration or mere curiosity - of all those attending her concerts shows the fascination some of us entertain for a virtual world which seems to offer tempting alternatives to the dullness of life in the flesh.

The concern over the power relations surrounding images might actually soon become irrelevant as we go towards a deeper integration of bodies and technologies. A reconfiguration of the relationship we entertain with images is inevitable and already happening. The techno-philosophical movement referred to as "transhumanism" designates, among other things, the strive of humanity to improve the body through its merging with technology. These enhancements range from the amelioration of intellectual capacities to the eternal preservation of the body throughout time immortality. Some techniques are currently being developed and released, which integrate the functions of image creation within the body itself. DARPA, the emerging technology department of the U.S. Ministry of Defense, has for instance developed and successfully tested a bionic vision system implanted in the brain and eyes of fully blind patients to help them recover partial sight and to distinguish light and shapes. This example is only the first in a stream of similar technological developments. The integration of imaging devices within the body itself is becoming reality. Soon it will be possible to capture images without relying on any external technical device. With the blink of an eye, images will be recorded directly from the retina onto the brain and stored internally in the brain memory, or externally on dedicated storage apparatus, such as external memory drives or networked servers. From this point onwards, the physicality of images will become completely superfluous, as they will form directly as information within our brains and will instantaneously be streamed onto an ever-wider network of connected brains. The networked body, an updated version of Belting's monadic perceiving body, becomes the new locus of images, at the center of a dynamic network where visual experiences belong to the realm of the collective.

The current debates on image saturation are therefore of little relevance and one can even start wondering about the role that image-makers will play in the collective economy of images. As images will be constantly produced and visions recorded, what will become of photography, its indexicality and its strive to capture that "decisive moment" dissolving within the "always now" of a constant image acquisition? The daze caused by the explosion of image production in the beginning of digital imagery is behind us, and although some might still be numbed by the speed of networks, which have by now completely "overcome our capacity for attention and disconnected our souls from our bodies," society is on the way to a profound merger of technology and human bodies. As eerie as it might seem to some of us, we will soon live in a space of "mixed reality", constantly interacting with images, no longer being able to distinguish the virtual from the real. It is of primary importance to adapt to the forces at stake behind this reconfigured visual environment, where images invade daily lives and materialize directly into physical reality, our bodies becoming cameras, endlessly producing and streaming images onto ever-expanding networks.

FOOTNOTES

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- 4 Yve-Alain Bois, Rosalind E. Krauss, *Formless: A User's Guide* (New York: Zone Books, 1997).
- 5 Bruno Latour, Peter Weibel, "What is Iconoclash? or Is there a world beyond the image wars?", Iconoclash, Beyond the Image-Wars in Science, Religion and Art (Cambridge: MIT Press, 2002).
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- 7 Hans Belting, An Anthropology of Images: Picture, Medium, Body (Princeton: Princeton University Press, 2011).
- 8 Belting, 20
- 9 Bruno Latour, Reassembling the Social: An Introduction to Actor-Network-Theory (Oxford: Oxford University Press, 2005).
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- 12 Levi Bryant, Stacy Alaimo: Porous Bodies and Trans-Corporeality, Larval Subjects, https://larvalsubjects.wordpress. com/2012/05/24/stacy-alaimo-porous-bodies-and-transcorporeality/ (May 24, 2012).
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- 19 Joselit, 16.
- 20 http://timursiqin.com/2014/PremierMachinicFuneraryPartII.html
- 21 Belting, 10
- 22 Jon Rafman, "Still Life (Betamale)", http://jonrafman.com/betamale/ (Jan. 19, 2015).
- 23 I am referring here to Henri Cartier-Bresson's notion of I' "instant
- 24 John Kelsey, "Next-Level Spleen," Artforum, September 2012.

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Networking Bodies is a collaborative project between Philips , S.Labs and (Art)ScienceBLR. The project focuses developing Remote Health Monitoring systems. In India, given shortage of trained staff, providing access to healthcare in remote areas and also care shifting from traditional settings like hospital to home, managing patients under treatment and patients recovering say from surgery has gained importance. We are looking at creating probes, through a hands-on design & technology & design NETWORKED BODIES PERFORMANCES Saturday 8 November, 8-10pm Theatre, £12.50 for three performances OR £15 joint ticket with Symposium. RING THE CHANGES+ Chisato Minamimura in collaboration with Nick Rothwell and body>data>space RING THE CHANGES+ is a digital performance created by deaf dance artist Chisato Minamimura in collaboration with software artist Nick Rothwell and digital pioneers body>data>space. Single-Network Whole-Body Pose Estimation. Gines Hidalgo1, Yaadhav Raaj1, Haroon Idrees2, Donglai Xiang1, Hanbyul Joo3, Tomas Simon1, Yaser Sheikh1 1Carnegie Mellon University, 2RetailNext, 3Facebook AI Research. gines.hidalgo@epicgames.com, {ryaadhav,donglaix,yaser}@cs.cmu.edu, haroon@retailnext.net, {hjoo,tsimon}@fb.com. arXiv:1909.13423v1 [cs.CV] 30 Sep 2019. Body Area Networks. Submission Deadline: 30 July 2020. Submission Deadline: 30 July 2020. IEEE Access invites manuscript submissions in the area of body area networks, wireless sensors networks, medical ICT, intelligent health management, and big data analysis. Wearable communications and personal health management are the future trends of the healthcare industry.