

Buying and Selling with the “Mark of the Beast”

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¹⁶ And he causeth all, both small and great, rich and poor, free and bond, to receive a mark in their right hand, or in their foreheads:
¹⁷ And that no man might buy or sell, save he that had the mark, or the name of the beast, or the number of his name. ¹⁸ Here is wisdom. Let him that hath understanding count the number of the beast: for it is the number of a man; and his number is Six hundred threescore and six. (Revelation 13:16-18, *King James Version of the Bible*)

ABSTRACT

The document appended here — an “International Application Published Under the Patent Cooperation Treaty (PCT)” — falls among the many “unprecedented” events witnessed during COVID-19. It was filed June 20, 2019 with the World Intellectual Property Organization (WIPO) under the PCT and its international publication date was March 26, 2020. Some have already scorned the idea that the document appended as the final entry to *IJVTPR* 1(2) is at least a partial fulfillment of an apocalyptic prophecy concerning the age-old conflict between good and evil. But it is as real and as relevant to COVID-19 as the vaccines that were envisioned and practically in production before SARS-CoV-2 infected the first human in Wuhan. Now, with the burden of the economic shut-down settling upon the people of the planet, the prospect of pandemics more deadly than COVID-19, has made many fearful enough to forfeit their free will to technocrats ready to manage them like robots. The patent applied for is about the buying and selling of “human necessities”. It would authorize the patent holder to use every manner of surveillance of an individual’s bodily states, actions, and thoughts to make the buying and selling of necessary products and services, contingent upon certain “work”, such as receiving or refusing to receive certain vaccines or meeting other requirements set by the patent holder.

Keywords: *contact tracing, cryptocurrency control, forfeiture of rights, global surveillance, new global monetary system, robotic management, technocratic control*

Global Surveillance Inside Your Body and Mind

The international patent application re-produced here — filed June 20, 2019 and published internationally on March 26, 2020 — is designated as WO 2020/060606. The international publication date came just 10 days after my university, along with virtually all those across the USA

and Canada, and schools at all levels, were locked down. Most of the faculty, yours truly included, were required to resort to 100% online, remote instruction to complete the courses then underway. The hope was that things would change in the following fall of 2020 but that was not to be. Now, as we look toward the start of a New Year, if anything, in many places governments have tightened some of the former restrictions.

The WIPO Publication Number

The abbreviation “WO” is shortened from “WIPO” which is an abbreviation of “World Intellectual Property Organization”. The four digits that follow specify the year of the , according to our current calendar which is, of course, 2020 AD — that is 2,020 years “after divinity” which is marked by the historical birth of Jesus Christ. The next six digits, in the case at hand, 060606, can range from 000000 to 999999, under the Patent Cooperation Treaty.

In that context, the patent application reproduced following this article was filed, not by Bill Gates-the-monopolist (Anon 2020g), but by Microsoft, the former company of the erstwhile richest man in the world, Bill Gates, now better known, by many at least, as a benefactor/philanthropist committed to helping save the world from diseases and from over-population with vaccines than as a monopolist (Gates 2010; Oller et al. 2017, 2020). More recently, in 2018 Mark Zuckerberg was called to account defending Facebook against charges of monopolistic power similar to those brought against Bill Gates twenty years earlier (Serwer 2018). In the meantime, however, Gates has distanced himself increasingly from the industry that enabled him, Zuckerberg, Bezos, and Musk to join the elite plutocracy of the uber-rich and powerful. And yet, the convoluted interconnections between vaccines and bioweapons linking the global military-industrial-pharmaceutical complex to the technocrats aiming to create a whole new system of currency invests them with an almost unimagined level of enforcement power. Whoever controls the planned surveillance, setting the rules for buying and selling of human necessities, can dictate actions at the level of individual human beings as never before. Here are a few features of the planned power of control under the systems of surveillance to be associated with the cryptocurrency system.

The Practice of the Invention and Its Surveillance Devices

The general and far-reaching patent application for the technocratic control of future buying and selling, contingent upon “proof of work” — that would be the verified performance of whatever required bodily actions the patent holder may choose to set for the use of the cryptocurrency — is not limited to the particular devices, methods, concepts, etc., described in the patent itself. The authors of the application say:

These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention, and it is understood that other embodiments may be utilized and that structural, logical, and electrical changes may be made without departing from the spirit and scope of the invention. The following detailed description is therefore not to be taken in a limiting sense, and the scope of the invention is defined only by the appended claims and equivalents thereof. (lines 21-26)

Conspiracy Theory or Fact?

In an evident attempt to “get out ahead” of the apocalyptic nature of the declared intentions in the patent application, a number of “grassroots” blogs (Evon 2020) have sprung up that make out the number “060606” in the published patent application to be a meaningless coincidence: here are a few quotes — but see Sharyl Attkisson 2008 for her evidence that plutocrats have ample power to generate countless “grassroots” blogs and news reports virtually blanketing the planet in what she described as manufactured “astroturf” — suggesting that the patent in focus is completely benign:

The number WO2020060606A1 contains three “6’s” but is obviously not the same as “666”. This patent focuses on tracking body activity via wearable technology, such as a smart watch, and makes no mention of implanted microchips. (“Does Microsoft Own Patent ‘666’ About Implanting Microchips in People?” at www.snopes.com by Evon 2020)

Conspiracy theories surrounding Bill Gates have been a huge part of the news cycle, especially amidst coronavirus fears. One such theory stems from a TED video featuring the former richest man in America explaining his fears of an imminent pandemic and how ill-equipped we are to handle it. . . . Citing his connection to Microsoft, and the multitude of conspiracy theories purporting that a group of tech leaders aim to create a global surveillance network that subjugates civilians by planting tracking chips inside them, parts of the internet are convinced a recent patent filing proves these ideas to be true. (“Microsoft, Bill Gates, Patent 666, & Microchipping Humans Explained”, Davis 2020)

There is an online war going on between the mainstream media and conspiracy theorist after Microsoft filed “Patent 060606” which the latter have called the mark of the beast from the bible that is going to be implanted in people. (“BILL GATES’ ‘PATENT 666’ SCARES THE WORLD: Is It True Microsoft Has Acquired Intellectual Property To Microchip Humans with the Mark of the Beast in Form of COVID-19 Vaccine...” Grapevine News 2020)

The origins and allure of the microchip conspiracy theory: Rich and famous people are frequently the center of conspiracy theories. The fact that Gates is a vocal proponent of public health initiatives long scrutinized by conspiratorial-minded groups only makes him an even riper target. It is possible that the conspiracy theory partly originated from a December study published by a team at the Massachusetts Institute of Technology. The study was funded, in part, by the Bill & Melinda Gates Foundation. The team had developed an “approach to encode medical history on a patient” by including a small amount of dye with a vaccine. The dye, which would be invisible to the naked eye but observable through a specialized cellphone app using infrared light, would keep a record of a child’s vaccines. The technique may be especially useful in developing countries, where record keeping is often more difficult. (“Fact check: Bill Gates is not planning to microchip the world through a COVID-19 vaccine”, Brown and Weise 2020)

So goes the narrative absolving the authors of the patent application of any potential thought of taking freedoms away from ordinary citizens. Much less would Bill Gates, or the authors of the patent application, even consider injecting micro-chip tracking devices into the human body. Well, yeah, there was that dye. Oh, yes, and according to the researchers at MIT it did contain “quantum dots” (McHugh et al. 2019) — “near-infrared light-emitting microparticles . . . invisible to the eye but [that] can be imaged using modified smartphones”. The purpose? “By codelivering a vaccine, the pattern of particles in the skin could serve as an on-person vaccination record” (Trafton 2019 referring to McHugh et al. 2019).

Absolution from Vaccine Related Microchip Inventions

According to proponents of what might be called “the Gates absolution narrative”, including unsurprisingly Bill Gates himself (see his denials in Brown and Weise 2020), freeing him from any

association with the Devil, not only is the number “060606” a meaningless coincidence, but it is absurd (I almost said “patently absurd”) to suppose that this particular patent application would cover anything like an implanted microchip device to track the history of a person’s bodily actions, much less their thoughts and intentions. Gates is quoted by Brown and Weise (2020) as having said in a phone call to him on June 3, 2020, “I’ve never been involved [*sic* in] any sort of microchip-type thing. . . . It’s almost hard to deny this stuff because it’s so stupid or strange.” Even stranger still — though it may help us understand why it is hard for Bill Gates to deny the “microchip-type thing” — is the fact that the primary supporter of the “quantum dot” research at MIT, listed in the report by McHugh et al. (2019) on the Web of Science site, was the Bill & Melinda Gates Foundation.

Free Will as the Ultimate Issue⁶

Skeptics, atheists, evolutionists of most stripes, and even some “Judeo Christian theologians”, but no Muslims that I know of, have contended that the human mind and even the exalted language capacity is purely a product of chance. They argue that the pinnacle of intelligence in the biosphere — though enigmatic as suggested in the title by Berwick and Chomsky, *Why Only Us? Language and Evolution* (2017a) — must be the product of a long and lucky series of accidents that just happened to occur. My late friend, John Omdahl, a geneticist and biochemist of some note, joined me in taking the contrary view (Oller and Omdahl 1994), that chance cannot produce even the simplest form of a true representation as known to any ordinary human being with the language capacity. Chance cannot generate the kind of complexity required. It cannot even get started, much less can it progress through the countless transformations required to generate the infinite connectedness of a single true narrative representation (Oller, Scott, and Oller 2018). What is more, it is interesting to me that the muscle systems over which human beings command the greatest degree of free will are those found in the tongue. In fact, the degree of autonomous free will control exhibited in those systems of muscles is only exceeded by our conceptual ability to produce thoughts of our own making, by virtue of our own uniquely human intelligence. We have more freedom of choice to control our words, and our thoughts, than over any other aspect of our lives.

Whereas many of my colleagues, undoubtedly the vast majority, but not all of them by any stretch, suppose as do Davidson and Winey, in this issue of the *IJVTPr*, that chance can generate the whole complexity of the ecological balance required for life and with it also the powers of thought and language that enable us to consider how such a balance could possibly come about. To support the theme pursued by Davidson and Winey, following the mainstream approach, but with creative adjustments such as their ideas about nonezymatic hydrogen atom transfer assisted by quantum entanglements, they suppose that chance associations can arrange themselves in the kind of balanced dynamism necessary for the existence of the entire present biosphere. Frankly, I believe the mistake in that theory is something like the illusion of an impossible event like the diver who leaps backward from the pool onto the diving board. It is easy enough for a reasonably fit person to tuck and roll from a handstand into a somersault followed by a return to a standing position. At my advanced age, I believe I can still do that maneuver. However, the best gymnast in the world cannot quite

⁶ For an impassioned and intelligible discussion of the freedom that is at stake during COVID-19 and with the coming vaccines, see Robert F. Kennedy, Jr.’s “International Message for Freedom and Hope”, at <https://www.youtube.com/watch?v=NpMWDCX1yMI> (Children’s Health Defense 2020).

execute the reverse. It can easily be produced on film, or in the imagination, but not in the real world.

Running the Film Backwards

The evolutionists are not mistaken about change, nor even about it being ubiquitous. Everyone believes in that kind of change because we all see it happening around us all the time. Evolution in that sense is a fact. Things change. We get older. But that kind of observable change, a *bona fide* kind of evolution, trends not toward increasing orderliness and meaning, but toward the antithesis of order (Oller 2010). It invariably trends toward what Shannon called “entropy” — and which Jaynes (1957a, 1957b) proved is necessarily irreversibly increasing in all actual experimental settings and whose proofs generalize to all biological settings (Oller 2014a). In the case of what I have termed “biosemiotic entropy”, we find a universal propensity for cumulative injuries to progress to disorder engendering increasing vulnerability to disease, and progressing inevitably to the catastrophic failure of organ systems that we call death. It is not a desirable outcome, nor can it be construed as the source of life.

We can run a film backwards, but time and chance do not flow in that direction, and we cannot make them do so. Time and chance guarantee progress in the other direction — all efforts to produce by chance something that might legitimately be called “negative” entropy are, according to long-standing proofs, doomed to fail. The general error of evolutionists who try to make out disease and death as the basis for the most exalted forms and manifestations of life, is like that of some hounds my father and his brothers used to hunt with: the dogs would sometimes take the “backtrack”. In any case, the trail of historical change is not always marked clearly for its direction. The result is that the dogs, going the wrong way, are actually getting farther and farther from their objective. That is pretty much the story for modern theories of origins grounded in Darwin’s efforts to use observed change to explain the requisite order that enabled him to observe anything at all — namely his God given language capacity and the freedom to believe and represent his discoveries according to his imaginations. Berwick and Chomsky, I believe, are following the backtrail as well. Their difficulty, like that of the hounds that went the wrong way, is that the deeper they go into the backtrack, the older is the trail, and the more difficult it is to discover and correct their error.

Who Needs Free Will Anyway?

Bill Gates acts as if he believes that human beings are really just robots in the first place, so what could be wrong with treating them as if free will were something of no consequence? Why bother with it? If cryptocurrency robs individuals of choice, so what? In a world totally created and governed, in the final analysis by chance, is freedom of will anything more than an illusion? According to the strictest forms of evolutionary thought, free will either does not exist at all or is a meaningless accident underlining the irony of existence in general. I am reminded here of Christopher Hitchens who is famously quoted as saying: “Yes I have free will; I have no choice but to have it” (Live by Quotes 2020). Apparently, he didn’t value it much and neither does Bill Gates. In any event, the international patent application at issue here would take so much freedom from the individuals in the grip of the cryptocurrency as to turn them into virtual robots.

The rub is that, on the side of the patent promoters, freedom of movement and the sanctity of your own skin is in question. If the cryptocurrency plan laid out is implemented as planned according to

those “skilled in the art” — if the plan for a global cryptocurrency is realized — the freedom to make ordinary choices about what to put inside your own body, what to eat and drink, whether to take a medicine or not, whether to go to the doctor or not, and so forth, is about to be taken over by the unseen managers of the cryptocurrency.

With that in mind, the people I am talking to and hearing from, refer to the planned surveillance system described in the patent reproduced here as “diabolical”. They see it as having apocalyptic, biblical portent. While claiming to free the human population from the threat of the future plagues being made possible by the deliberate manipulation of deadly pathogens in laboratories ostensibly aiming to prevent what is already happening in COVID-19, the authors of the patent application seek to implement a new global system of commerce that will place all its users almost completely under the control of the plutocrats who own the patent and the invention of the cryptocurrency system. Freedom of will on the part of the ordinary persons using that cryptocurrency will be forfeited, gone with the wind.

Good News for Those Who Refuse the Mark of the Beast

The patent holder for the “embodiment (including firmware, resident software, micro-code, etc.)” but not limited to any of those as “will be understood by those of skill in the art that there are other embodiments that are equivalent to the described embodiments . . . [but] the invention is not to be limited by the described embodiments, but only by the scope of the appended claims” (Abramson et al. 2020) will evidently seek to force the constraints of the new cryptocurrency on everyone. Those who do not conform will be prevented from participating in the buying and selling necessary to normal human existence. So what is a person to do?

Government

With respect to government policy, James Lyons-Weiler has made some excellent recommendations in this issue of the *IJVTPr*.

Banking

With respect to banking and an alternative to the proposed new order with a global cryptocurrency, Catherine Austin Fitts has expressed some thoughts worth consideration in her 47 minute interview with Greg Hunter at <https://robinwestenra.blogspot.com/2020/12/catherine-austin-fitts-on-great-reset.html> (Hunter 2020).

The Merciful God of Abraham

In my own personal view, there is no hope for any of us apart from the message of the cross: I believe there is a just Creator who is so serious about preserving our freedom of will that he incurred in the body of his only begotten son, the judgment of all our bad choices so we might live by freely trusting in Jesus Christ. I agree with Gottfried Wilhelm Leibniz (1686) who wrote in the 37th principle of his *Discourse on Metaphysics* that

Jesus Christ . . . alone has shown how much God loves us, and how exactly he has provided for everything that affects us:

- that, caring for sparrows, he will not neglect the rational creatures who are infinitely dearer to him;
- that all the hairs of our heads are counted;
- that the sky and the earth will perish before any change in the word of God or in any of the conditions for our salvation;
- that God cares more about the least of thinking souls than about the whole machine of the world;
- that we need not fear those who can destroy bodies but could not harm souls, because God alone can make souls happy or unhappy;
- that the souls of the just are, in his hands, safe from all the revolutions of the universe, since nothing can act on them except God alone;
- that none of our actions is forgotten;
- that everything is taken into account, even an idle remark or a well used spoonful of water; and, finally,
- that all must result in the greatest well-being for good people, that the righteous shall be like suns, and that we have never experienced or conceived anything giving us a fore-taste of the happiness that God prepares for those who love him.

As I close this issue of the *IJVTPR* during the few days that remain between Christmas 2020 and the first day of 2021, I believe I am seeing change (evolution) on a scale that is more far-reaching and is occurring at a pace never before experienced. It seems we are moving toward the climax of history: in such a context as COVID-19 and at such a time as this, the words recorded by the prophet Daniel as spoken to him by the Angel of the Lord are surely being fulfilled: “But thou, O Daniel, shut up the words, and seal the book, even to the time of the end: many shall run to and fro, and knowledge shall be increased” (Daniel 12:4, *King James Version* of the Bible). There is — in my own personal view, speaking as just one among the billions on the planet, each of us still exercising the freedom to believe as we choose — just one source of Good News. In my view, during this post-normal age of COVID-19, that source is the Lord Jesus Christ.

This Christmas I believe I heard a more complete exposition than was ever possible before the recent events including COVID-19 were in view. That presentation was the central part of the Christmas program and sermon delivered by Joseph Prince and co-workers at Creation Life Church in Singapore and Grace Revolution Church in Dallas, Texas and is available online in its entirety (<https://sermons-online.org/joseph-prince/live/christmas-experience-2020>). With that in view, I believe our freedom of will is so important and inviolable from the viewpoint of God Almighty in his love for us, that the cross of Christ was the only possible way, and as Leibniz argued in his *Discourse*, it was the one perfect way to provide salvation to us. I love that passage in Psalm 85:10 where it says, “Mercy and truth are met together, righteousness and peace have kissed each other”. It all happened at the cross where the judgment owed to us fell on Jesus Christ and him alone. Grace is offered freely to us to receive or not as we choose. For my part I say: What a Savior! Hallelujah!

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Declarations under Rule 4.17:

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- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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CRYPTOCURRENCY SYSTEM USING BODY ACTIVITY DATA

BACKGROUND

- [0001] A virtual currency (also known as a digital currency) is a medium of exchange
5 implemented through the Internet generally, not tied to a specific government-backed
“flat” (printed) currency such as the U.S. dollar or the Euro, and typically designed to
allow instantaneous transactions and borderless transfer of ownership. One example of
virtual currency is cryptocurrency, wherein cryptography is used to secure transactions
and to control the creation of new units.
- 10 [0002] Several cryptocurrencies exist. Among these, the most well known is a blockchain-
based cryptocurrency. Most blockchain-based cryptocurrency is decentralized in the sense
that it has no central point of control. However, blockchain-based cryptocurrency can also
be implemented in a centralized system having a central point of control over the
cryptocurrency. Bitcoin is one of the examples of blockchain-based cryptocurrency. It is
15 described in a 2008 article by Satoshi Nakamoto, named “Bitcoin: A peer-to-Peer
Electronic Cash System”.
- [0003] A blockchain is a data structure that stores a list of transactions and can be thought
of as a distributed electronic ledger that records transactions between source identifier(s)
and destination identifier(s). The transactions are bundled into blocks and every block
20 (except for the first block) refers back to or is linked to a prior block in the blockchain.
Computer resources (or nodes, etc.) maintain the blockchain and cryptographically validate
each new block and the transactions contained in the corresponding block. This validation
process includes computationally solving a difficult problem that is also easy to verify and
is sometimes called a “proof-of-work”. This process is referred to as “mining”. The mining
25 may be a random process with low probability so that a lot of trial and error is required to
solve a computationally difficult problem. Accordingly, the mining may require enormous
amounts of computational energy.
- [0004] It is with respect to these and other general considerations that the following
embodiments have been described. Also, although relatively specific problems have been
30 discussed, it should be understood that the embodiments should not be limited to solving
the specific problems identified in the background.

SUMMARY

[0005] Some exemplary embodiments of the present disclosure may use human body
activity associated with a task provided to a user as a solution to “mining” challenges in

- cryptocurrency systems. For example, a brain wave or body heat emitted from the user when the user performs the task provided by an information or service provider, such as viewing advertisement or using certain internet services, can be used in the mining process. Instead of massive computation work required by some conventional
- 5 cryptocurrency systems, data generated based on the body activity of the user can be a proof-of-work, and therefore, a user can solve the computationally difficult problem unconsciously. Accordingly, certain exemplary embodiments of the present disclosure may reduce computational energy for the mining process as well as make the mining process faster.
- 10 [0006] Systems, methods, and hardware aspects of computer readable storage media are provided herein for a cryptocurrency system using human body activity data. According to various embodiments of the present disclosure, a server may provide a task to a device of a user which is communicatively coupled to the server. A sensor communicatively coupled to or comprised in the device of the user may sense body activity of the user.
- 15 Body activity data may be generated based on the sensed body activity of the user. A cryptocurrency system communicatively coupled to the device of the user may verify whether or not the body activity data satisfies one or more conditions set by the cryptocurrency system, and award cryptocurrency to the user whose body activity data is verified.
- 20 [0007] Examples are implemented as a computer process, a computing system, or as an article of manufacture such as a device, computer program product, or computer readable medium. According to one aspect, the computer program product is a computer storage medium readable by a computer system and encoding a computer program comprising instructions for executing a computer process.
- 25 [0008] This summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used to limit the scope of the claimed subject matter.

BRIEF DESCRIPTION OF THE DRAWINGS

- 30 [0009] Various embodiments in accordance with the present disclosure will be described with reference to the drawings, in which:
- [0010] FIG. 1 illustrates an example environment in which some exemplary embodiments of the present disclosure may be practiced;
- [0011] FIG. 2 shows a system diagram of a decentralized cryptocurrency system according

to an exemplary embodiment of the present disclosure;

[0012] FIG. 3 shows a flow diagram of a computer-implemented method according to an exemplary embodiment of the present disclosure;

[0013] FIG. 4 shows a flow diagram of an operation for generating body activity data
5 according to an exemplary embodiment of the present disclosure;

[0014] FIG. 5 shows a flow diagram of an operation for verifying body activity data according to an exemplary embodiment of the present disclosure;

[0015] FIG. 6 illustrates a blockchain and two exemplary blocks of the blockchain according to an exemplary embodiment of the present disclosure;

10 [0016] FIG. 7 shows a flow diagram of a computer-implemented method using a vector or embedding according to another exemplary embodiment of the present disclosure; and

[0017] FIG. 8 illustrates an exemplary block diagram of a computer or processing system in which processes involved in the system, method, and computer program product described herein may be implemented.

15 [0018] Corresponding numerals and symbols in the different figures generally refer to corresponding parts unless otherwise indicated. The figures are drawn to clearly illustrate the relevant aspects of the embodiments and are not necessarily drawn to scale.

DETAILED DESCRIPTION OF EMBODIMENTS

[0019] In the following detailed description, reference is made to the accompanying
20 drawings which form a part hereof, and in which are shown by way of illustration specific embodiments in which the invention may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention, and it is to be understood that other embodiments may be utilized and that structural, logical and electrical changes may be made without departing from the spirit and scope of the invention. The
25 following detailed description is therefore not to be taken in a limiting sense, and the scope of the invention is defined only by the appended claims and equivalents thereof. Like numbers in the figures refer to like components, which should be apparent from the context of use.

[0020] The term “cryptocurrency” may mean a digital currency in which encryption
30 techniques are used to regulate the generation of units of currency and verify the transfer of funds. Many cryptocurrencies include the use of a blockchain to provide security and prevent fraud as double spending. Some embodiments of the present disclosure may be used in alternate cryptocurrency mechanisms other than a blockchain. The system, method, and computer program products described herein may be applied to both centralized and

decentralized cryptocurrency networks or databases.

[0021] FIG. 1 illustrates an example environment 100 in which some exemplary embodiments of the present disclosure may be practiced. The example environment 100 includes, but is not limited to, at least one of task server 110, communication network 120, 5 user device 130, sensor 140, and cryptocurrency system 150.

[0022] Task server 110 may provide one or more tasks to user device 130 over communication network 120. For example, task server 110 may be at least one of a web server delivering or serving up web pages, an application server handling application operations between users and applications or databases, a cloud server, a database server, a 10 file server, a service server, a game server implementing games or services for a game, and a media server delivering media such as streaming video or audio. The tasks provided by task server 110 will be discussed in more detail below.

[0023] Alternatively, cryptocurrency system 150 may provide one or more tasks to user device 130. For example, in a decentralized cryptocurrency network, the tasks may be 15 proposed to user device 130 by miners (e.g. compute resources or nodes 210 of FIG. 2). In another example, in a centralized cryptocurrency system, a cryptocurrency server may send the tasks to user device 130.

[0024] Communication network 120 may include any wired or wireless connection, the internet, or any other form of communication. Although one network 120 is identified in 20 FIG. 1, communication network 120 may include any number of different communication networks between any of the server, devices, resource and system shown in FIGS. 1 and 2 and/or other servers, devices, resources and systems described herein. Communication network 120 may enable communication between various computing resources or devices, servers, and systems. Various implementations of communication network 120 may employ 25 different types of networks, for example, but not limited to, computer networks, telecommunications networks (e.g., cellular), mobile wireless data networks, and any combination of these and/or other networks.

[0025] User device 130 may include any device capable of processing and storing data/information and communicating over communication network 120. For example, user 30 device 130 may include personal computers, servers, cell phones, tablets, laptops, smart devices (e.g. smart watches or smart televisions). An exemplary embodiment of user device 130 is illustrated in FIG. 6.

[0026] Sensor 140 may be configured to sense the body activity of user 145. As illustrated in FIG. 1, sensor 140 may be a separate component from user device 130 and be operably

and/or communicatively connected to user device 130. Alternatively, sensor 140 may be included and integrated in user device 130. For example, user device 130 may be a wearable device having sensor 140 therein. The sensor 140 may transmit information/data to user device 130. Sensor 140 may include, for example, but not limited to, functional magnetic resonance imaging (fMRI) scanners or sensors, electroencephalography (EEG) sensors, near infrared spectroscopy (NIRS) sensors, heart rate monitors, thermal sensors, optical sensors, radio frequency (RF) sensors, ultrasonic sensors, cameras, or any other sensor or scanner that can measure or sense body activity or scan human body. For instance, the fMRI may measure body activity by detecting changes associated with blood flow. The fMRI may use a magnetic field and radio waves to create detailed images of the body (e.g. blood flow in the brain to detect areas of activity). The material (<http://news.berkeley.edu/2011/09/22/brain-movies/>) shows one example of how the fMRI can measure brain activity associated with visual information and generate image data.

[0027] Cryptocurrency system 150 may include one or more processors for processing commands and one or more memories storing information in one or more cryptocurrency data structures. In some embodiments, cryptocurrency system 150 may be a centralized cryptocurrency system or network, for example, but not limited to, a server which may be privately run by a third party entity or the same entity that is running the task server 110. In other embodiments, cryptocurrency system 150 may be a publically accessible network system (e.g., a distributed decentralized computing system).

[0028] For example, cryptocurrency system 150 may be a decentralized network 200, such as a decentralized blockchain network, including one or more compute resources 210, as shown, for example, in FIG. 2. In the embodiment of FIG. 2, there may be no central authority controlling cryptocurrency network 200. The data stored on blockchain network 200, i.e., the public ledger, may not be stored at a central location in its entirety. Blockchain network 200 may include a plurality of processors for processing commands and a plurality of memories storing information in one or more blockchain data structures. Blockchain network 200 may maintain one or more blockchains of continuously growing lists of data blocks, where each data block refers to previous blocks on its list. The requirement for each block to refer to all previous blocks in the blockchain, yields a chain of blocks that is hardened against tampering and revision, such that the information stored in the blockchain is immutable.

[0029] Compute resources 210 may include any device, computer, system or otherwise that has joined blockchain network 200 and forms a node in blockchain network 200. Compute

resources 210 may include, for example, but not limited to, personal computers, servers, cell phones, tablets, laptops, smart devices (e.g. smart watches or smart televisions), or any other device capable of storing information and communicating over communication network 120. In some embodiments, compute resources 210 may be unaffiliated with or unknown to each other where, for example, compute resources 210 remain anonymous. Each compute resource 210 may include memory 220 that stores a copy of at least a portion of public ledger 230 of blockchain network 200. Compute resources 210 may also execute one or more programs to perform various functions associated with maintaining blockchain network 200 including, for example, updating public ledger 230, generating new blocks, or any other similar function.

[0030] For illustration purposes, FIG. 1 illustrates user device 130 as not included in blockchain network 200. However, user device 130 may be part of blockchain network 200 and be implemented as one of the compute resources 210 in FIG. 2.

[0031] Public ledger 230 may store any transactions performed over blockchain network 200 including but not limited to, for example, any transaction related to and occurring on blockchain network 200. Because each compute resource 210 stores a copy of at least a portion of the public ledger 230 of blockchain network 200, public ledger 230 may be independently verified for accuracy at any time by comparing the stored copies of multiple compute resources 210.

[0032] Communication between compute resources 210 may occur via communication network 120. Communication network 120 of FIG. 2 may be the same network as, or be a different network from, communication 120 of FIG. 1. In some embodiments, each compute resource 210 may communicate directly with each other compute resource 210. In some embodiments, some compute resources 210 may not be able to communicate directly with each other. For example, they are not connected to the same communications network 120. In this case, communications related to blockchain network 200 between the compute resources 210 may occur by using one or more of the remaining compute resources 210 as an intermediary. In some embodiments, one or more of compute resources 210 may not maintain a continuous connection to blockchain network 200 at all times. For example, a compute resource 210 may only be connected to blockchain network 200 during a certain period of time each day or may only be connected to blockchain network 200 intermittently throughout the day. Due to the decentralized nature of blockchain network 200, such an intermittent connection by one or more compute resources 210 does not affect the overall operation of blockchain network 200 since copies of public ledger 230 are stored on multiple

compute resources 210. Once the disconnected compute resource 210 reconnects to blockchain network 200, the disconnected compute resource 210 may receive updated copies of the public ledger 210 from one or more of the compute resources 210 that have been connected to blockchain network 200.

5 [0033] FIG. 3 shows a flow diagram of a computer-implemented method according to an exemplary embodiment of the present disclosure.

[0034] Method 300 begins at operation 310 illustrated in FIG. 3, where task server 110 provides one or more tasks to device 130 of user 145 over communication network 120. The tasks include, for example, but not limited to, watching or listening information (e.g. advertisement) for a certain time, using services (e.g. search engine, chat bot, e-mail, social media/networking service and any internet or web service), uploading or sending information/data to a website, a server or a network (e.g. content sharing website, and cloud network or server), or any other information or service which may produce effects on users. In the blockchain, the task(s) may be included as a transaction in the public ledger 230.

15 [0035] Furthermore, the task(s) provided by task server 110 can include solving a test for distinguishing human from machine input so that humans but not computers are able to pass it, such as, Computer Automated Program to Tell Computers and Humans Apart (CAPTCHA) and reCAPTCHA which is a CAPTCHA-like system designed to establish that a computer user is human. The task may require user 145 to solve a verification challenge, for example, but not limited to, an image based challenge including instructions prompting user 145 to solve the challenge through interaction with one or more images.

[0036] At operation 320, when or after user 145 performs the task(s) provided by task server 110, sensor 140 may sense the body activity of user 145 that is a body response related to the task provided by task server 110, and then transmit the sensed body activity of user 145 to user device 130. The body activity may include, for example, but not limited to, radiation emitted from human body, brain activities, body fluid flow (e.g. blood flow), organ activity or movement, body movement, and any other activities that can be sensed and represented by images, waves, signals, texts, numbers, degrees, or any other form of information or data. Examples of body radiation emitted from human body may include radiant heat of the body, pulse rate, or brain wave. Brain waves may comprise, for example, but not limited to, (i) gamma waves, involved in learning or memory tasks, (ii) beta waves, involved in logical thinking and/or conscious thought, (iii) alpha waves, which may be related to subconscious thoughts, (iv) theta waves, which may be related to thoughts involving deep and raw emotions, (v) delta waves, which may be involved in sleep or deep relaxation, or (vi)

electroencephalogram (EEG), which may be measurement used to evaluate the electrical activity in the brain, such as deep concentration. Examples of the body movement may include eye movement, facial movement or any other muscular movements. Furthermore, brain activity can be sensed using the fMRI. The fMRI measures brain activity by detecting
5 changes associated with blood flow. This technique relies on the fact that cerebral blood flow and neuronal activation are coupled. When an area of the brain is in use, blood flow to that region also increases.

[0037] At operation 330, user device 130 generates body activity data based on the body activity sensed by sensor 140. Operation 330 may be part of a mining process which is a
10 process for solving a computationally difficult problem. One exemplary embodiment of operation 330 is shown in FIG. 4. As shown in FIG. 4, operation 330 may comprise operations 410 and 420.

[0038] At operation 410, the body activity sensed by sensor 140 may be codified in symbolic forms, such as letter(s), numeral(s), symbol(s), and a string comprising sequence
15 of characters. In one example, the body activity can be codified by extracting one or more values from the sensed body activity, such as minimum and/or maximum amplitude(s) or frequency(ies) of a body activity signal (e.g. brain waves). In another example, user device 130 may window and sample the sensed body activity over time and calculate the average of the sampled values. In still another example, user device 130 may generate raw data of
20 the body activity. In still another example, user device 130 may filter a raw signal of the body activity using one or more filters to apply the filtered body activity signal to an audio hash function or algorithm at operation 420. Alternatively, any statistic value(s) associated with human body activity can be codified from the body activity sensed by sensor 140.

[0039] At operation 420, the codified body activity may be converted into an encrypted
25 output by using an encryption algorithm, such as a hash algorithm or function. For example, hash functions include functions that map an initial input data set of an output data set. Generally, the hash function may be any function that can be used to map data of arbitrary size to data of fixed size. The hash function allows one to easily verify that some input data maps to a given hash value, but if the input data is unknown, it is deliberately difficult to
30 reconstruct it (or any equivalent alternatives) by knowing the stored hash value. The hash algorithm or function may be included in the mining software or program of the cryptocurrency system or database.

[0040] For example, operation 420 may use audio hash function, where the histogram of frequencies of the codified body activity are summed up, or bit manipulation, such as XOR

function of each histogram bucket with the next or a modulus of a prime number, is performed on the codified body activity.

[0041] In some embodiments, an analog hash function where the body activities themselves are hashes can be used. For example, waves or signals sensed by sensor 140, for example, but not limited to, alpha, beta, delta or gamma waves from the EEG sensor, may be transformed to a histogram using a transforming algorithm or formula, such as Fast Fourier Transform (FFT) or any other algorithm or formula that can convolve, add or multiply waves or signals to produce a histogram. The hash may be the histogram itself. For example, the hash may be the output of the FFT where each component is a frequency band and the value is counts corresponding to each frequency band. In another example, the desired properties may be that the first two frequency histograms are as close to zero as possible, for instance, provided some statistical guarantee exists that this cannot happen easily.

[0042] However, operation 420 is optional. In certain embodiments, user device 130, without encrypting or hashing the codified body activity, may transmit the codified body activity generated at operation 410 to cryptocurrency system 150.

[0043] Although FIG. 3 illustrates that operation 330, including operation 410 and 420, is processed by user device 130, at least one of operations 410 and 420 can be processed by another device(s), server, resource or system, such as task server 110, cryptocurrency system 150 or any other server. For example, the user device 130 may generate raw data of the sensed body activity, transmit it to cryptocurrency system 150, task server 110 or any other server, and then cryptocurrency system 150, task server 110 or any other server may codify or hash the raw data of the sensed body activity.

[0044] Referring back to FIG. 3, at operation 340, cryptocurrency system 150 verifies if the body activity data of user 145 generated by user device 130 satisfies one or more conditions set by an algorithm of cryptocurrency system 150. The conditions may be set by simulating human body activity across all of body activities that can constitute hashes. Machine learning algorithms may be used to simulate body activities and set the conditions for valid body activities, for example, but not limited to, using generative adversarial networks.

[0045] In some embodiments, cryptocurrency system 150 verifies whether the body activity data of user 145 (e.g. the code of the body activity generated at operation 410 or the hash of the body activity generated at operation 420) may represent that the body activity of user 145 is within a target range. The target range may be determined using the amount of cognitive effort that user 145 requires to perform the task provided by task server 110. For example, to verify if the hash of the body activity of user 145, cryptocurrency system 150

may determine, for example, but not limited to, (i) whether the hash of the body activity of user 145 has a specific certain pattern, repeated patterns, a mathematical properties or the number of leading numbers, characters or strings (e.g. leading zeroes) set by cryptocurrency system 150, or (ii) whether the hash of the body activity of user 145 is less than a current target value. Examples of the numerical patterns set by cryptocurrency system 150 may be a pattern that first certain digits of the hash form a prime number, or a pattern that a number that is calculated by applying first certain digits of the hash to a preset formula forms a prime number (For example, a number calculated by adding or subtracting a predetermined number or a number set by cryptocurrency system 150 to the first four digits of the hashing forms a prime number). The repeating number patterns may include a repeating number (e.g. leading zeros, ones in the middle of the hash, twos in the last four digits of the hash, and any repeating numbers included in the hash) and a repeating number sequence (e.g. leading repeating digit pairs, such as “121212”, or triplets “123123”). If the hash of the body activity of user 145 has the desirable pattern(s) or is within the target range, then the proof of work or proof of stake is considered solved, and that hash can be a new block. The target range or value may be changed periodically to maintain a preselected level of difficulty, although it is not required. For example, the target value may be inversely proportional to the difficulty. By varying the difficulty, a roughly constant rate of block generation may be kept.

[0046] The target range of valid body activity may be set using statistical data so that normal body activity, activity that can easily happen, or faking body activity cannot be validated. For example, the target range of valid body activity may be selected from a range that human miners cannot fake their own body activity to satisfy the target range to prove and validate the proof-of-work.

[0047] Additionally, the verification at operation 340 may include filtering out invalid tasks, malformed data (syntax errors) or data sent from an unauthorized user or generated by a machine learning system. For example, cryptocurrency system 150 may receive, from user device 130, data of the body activity generated before the hash algorithm is applied, rehash that data, and then compare the rehashed data with the hash received from user device 130 to check whether the body activity data is generated based on human, not random computer generated data. Voxel(s) of the image of the fMRI may be an example of the data of the body activity generated before the hash algorithm is applied.

[0048] One exemplary embodiment of operation 340 is shown in FIG. 5. At operation 510, cryptocurrency system 150 may check whether the hash of the body activity, received from

user device 130, is within the target range set by cryptocurrency system 150, or comprises a desirable pattern set by cryptocurrency system 150. If the hash of the body activity is within the target range or has a desirable pattern set by cryptocurrency system 150, cryptocurrency system 150 rehashes data of the body activity, generated before the hash
5 algorithm is applied and transmitted with the hash of the body activity from user device 130 (Operation 520), and then compare the rehashed data with the hash of the body activity, received from user device 130 (Operation 530). If the rehashed data is identical to the hash of the body activity, received from user device 130, cryptocurrency system 150 proceeds to operation 350. However, if determining in operation 510 that the hash of the body activity
10 data is out of the target range or does not include the desirable pattern set by cryptocurrency system 150 or if determining in operation 530 that the rehashed data does not match the hash of the body activity, operation 310 or 320 may be proceeded.

[0049] At operation 350, when the body activity data transmitted from user device 130 satisfies one or more conditions set by cryptocurrency system 150, cryptocurrency system
15 150 awards cryptocurrency to user 145. For example, cryptocurrency system 150 awards to user 145 an amount of cryptocurrency corresponding to the task accomplished by user 145. Additionally, cryptocurrency system 150 may award cryptocurrency to an owner or operator of task server 110 as a reward for providing services, such as, search engines, chatbots, applications or websites, offering users access for free to paid contents (e.g. video
20 and audio streaming or electric books), or sharing information or data with users.

[0050] For example, in the blockchain cryptocurrency system, at operation 340, at least one of compute resources 210 of FIG. 2 verifies if the hash of the body activity data of user 145 is valid. At operation 350, when the hash of the body activity data of user 145 is validated
at operation 340, the compute resource 210 of FIG. 2 can add a new block to the blockchain.
25 The new block may contain the number of cryptocurrency units assigned to the user's address. The new blockchain with the additional added block is broadcasted around the cryptocurrency network 150. The compute resource 210, which performed operations 340 and 350, may be also rewarded with transaction fees and/or cryptocurrency.

[0051] FIG. 5 depicts a blockchain 500 and two exemplary blocks 510, 520 of blockchain
30 500 according to exemplary embodiments of the present disclosure. Typically a "blockchain" is understood as being a data structure comprising a series of blocks, where each block includes data corresponding to one or more transactions, hashed together with linking data, such as the hash of an immediately preceding block. In the embodiment of the present disclosure, the transaction may be the task performed by user 145. The chain can

then be used to create a ledger, which is typically an append-only database. Once data is entered into a block of the chain, the entry is essentially irrefutable, since any tampering with the data would be reflected in the chained hash calculations and is thus easily detected.

[0052] The blockchain 500 may represent the publicly distributable transactions ledger, such as ledger 230 of FIG. 2, and may include a plurality of blocks. Each block, such as block 510 and block 520 may include data regarding recent transactions. For example, the task performed by user 145 and the number of cryptocurrency units awarded to user 145, and/or contents linking data that links one block 520 to a previous block 510, and proof-of-work data, for example, the validated hash of the body activity, that ensures that the state of the blockchain 500 is valid and is endorsed/verified by a majority of the record keeping system. Exemplary embodiments of block 520 of blockchain 500 may include a current hash, a previous hash of previous block 510, transaction. The previous hash is a hash from the immediately preceding block, which ensures that each block is immutably tied to previous block. The hash of previous block 510 may be included in block 520, thereby linking block 520 to previous block 510.

[0053] Transaction information cannot be modified without at least one of compute resources 210 noticing, thus, the blockchain 500 can be trusted to verify transactions occurring on blockchain 500.

[0054] In some embodiments, vectors or embeddings may be used for body activity data. FIG. 7 shows a flow diagram of an exemplary embodiment of a computer-implemented method using vectors (or embedding). As described in detail above with respect to FIG. 3, task server 110 or cryptocurrency system/network 150, such as a central cryptocurrency server or compute resource (or node) 210, may perform operation 310 where one or more tasks are proposed to user device 130 over communication network 120, and sensor 140 may perform operation 320 where sensor 140 senses or measures the body activity of user 145. Sensor 140 (or user device 130) may generate data of the body activity in the form of images, waves, signals, numbers, characters, strings or any other form that can represent the body activity.

[0055] At operation 710, user device 130 produces one or more vectors (or embeddings), such as an array of floating point numbers, from the data of the body activity generated by sensor 140 (or user device 130). An algorithm stored in user device 130, or any device, server, system or network communicatively connected to user device 130 over communication network 120, may transform the data of the body activity generated by sensor 140 (or user device 130) into one or more vectors. For example, the brain image

generated by the fMRI scanner may be fed into a computer vision machine learning algorithm, for example, but limited to, a convolution neural network, and the machine learning algorithm may generate one or more vectors from one or more voxels of the brain image. In some embodiments, one single vector may be generated at operation 710. In
5 other embodiments, a series of vectors may be produced by sampling over time when user 145 is performing the task(s). The data of the body activity (e.g. voxels of a brain image) and/or the vectors (or embeddings) may generate a “proof of work” and be transmitted to cryptocurrency system/network 150.

[0056] In addition, the vectors may optionally include one or more vectors related to the
10 task(s), for example, but not limited to, search terms that user 145 used or identified s) of advertisement that user 145 viewed.

[0057] At operation 720, the vector(s) generated at operation 710 may be converted into an encrypted output by using an encryption algorithm, such as a hashing algorithm or function, as explained above with respect to operation 420 of FIG. 4. For example, the vector(s) can
15 be hashed as bytes with the hashing algorithm, such as Secure Hash Algorithm (SHA)-1, SHA-256, SHA-384, SHA-512, and Message Digest (MD)-5.

[0058] However, operation 720 is optional. In some embodiments, user device 130 can transmit the vector(s) of the body activity produced at operation 710 to cryptocurrency system 150 without encrypting or hashing them.

[0059] At operation 730, cryptocurrency system 150 receives, from user device 130, the
20 data of the body activity of user 145 (e.g. voxels of a brain image) and/or the vector(s) (or the hash) of the body activity of user 145.

[0060] At operation 740, cryptocurrency system 150 checks if the vector(s) received from user device 130 have one or more mathematical properties set by cryptocurrency
25 system/network 150. For example, cryptocurrency system 150 may determine whether the vector(s) of the body activity have similarity (or relationship) with a legitimate vector (or a baseline vector) set by an algorithm of cryptocurrency system 150. The similarity may be measured or calculated using, for example, but not limited to, a cosine similarity, the Euclidean distance, the Manhattan distance, the Minkowski distance, and the Jaccard
30 similarity. The legitimate vector may be set based on the assumption that the vectors of body activities of people who are performing the same task have a certain degree of similarity. Cryptocurrency system 150, such as a central cryptocurrency server/network or compute resource (or node) 210 of FIG. 2, can decide the legitimate vector and similarity. For example, miners like compute resources (or nodes) 210 of FIG. 2 can share their proof

of work including, for example, but not limited to, vectors of body activities, with cryptocurrency network 150, and decide the legitimate vector and similarity by calculating the average of the proof of work (e.g. a centroid or weighted average of the vectors and a standard deviation).

5 [0061] If the vector(s) received from user device 130 have the mathematical property(ies) set by cryptocurrency system/network 150, cryptocurrency system/network 150 rehashes the data of the body activity, transmitted from user device 130 (Operation 750), and then compares the rehashed output with the vectors (or the hash) received from user device 130 (Operation 760). For example, computer resource (or node) 210 of FIG. 2 may rehash the
10 fMRI voxels, transmitted from user device 130, to a vector, and then compare the rehashed vector with the vector received from user device 130 to check whether the body activity data is generated based on human, not random computer generated data. If determining in operation 740 that the vector(s) received user device 130 do not satisfy the mathematical property(ies) set by cryptocurrency system/network 150 or if determining in operation 760
15 that the rehashed output does not match the vector(s) (or the hash) received from user device 130, operation 310 or 320 may be proceeded.

[0062] If the rehashed output is identical to the vector(s) (or the hash) received from user device 130, cryptocurrency system/network 150 awards cryptocurrency to user 145 as described in detail above with respect to operation 350. For example, in the blockchain
20 cryptocurrency system, a miner, such as one of compute resources (or nodes) 210 of FIG. 2, which performed the validation of the body activity data, may add a new block, which includes the data of the body activity, the vector(s) (or the hash) and/or the number of cryptocurrency units assigned to the user's address, to the blockchain, broadcast a new blockchain with the new block around cryptocurrency network 150, and may be rewarded
25 with transaction fees and/or cryptocurrency.

[0063] FIG. 8 illustrates a schematic of an example computer or processing system that may implement any of the systems, methods, and computer program products, such as task server 110, user device 130, cryptocurrency system 150 and compute resources 210, described herein in one embodiment of the present disclosure. The computer system is only one
30 example of a suitable processing system and is not intended to suggest any limitation as to the scope of use or functionality of embodiments of the methodology described herein. The processing system shown may be operational with numerous other general purpose or special purpose computing system environments or configurations. Examples of well-known computing systems, environments, and/or configurations that may be suitable for use

with the processing system shown in FIG. 8 may include, but are not limited to, personal computer systems, server computer systems, thin clients, thick clients, handheld or laptop devices, multiprocessor systems, microprocessor-based systems, set top boxes, programmable consumer electronics, network PCs, minicomputer systems, mainframe
5 computer systems, and distributed cloud computing environments that include any of the above systems or devices, and the like.

[0064] The computer system may be described in the general context of computer system executable instructions, such as program modules, being executed by a computer system. Generally, program modules may include routines, programs, objects, components, logic,
10 data structures, and so on that perform particular tasks or implement particular abstract data types. The computer system may be practiced in distributed cloud computing environments where tasks are performed by remote processing devices that are linked through a communications network. In a distributed cloud computing environment, program modules may be located in both local and remote computer system storage media including memory
15 storage devices.

[0065] The components of computer system 800 may include, but are not limited to, one or more processors or processing units 810, system memory 820, and bus 830 that couples various system components including system memory 820 to processor 810. Processor 810 may include software module 815 that performs the methods described herein. The module
20 815 may be programmed into the integrated circuits of processor 810, or loaded from memory 820, storage device 840, or network 850 or combinations thereof.

[0066] Bus 830 may represent one or more of any of several types of bus structures, including a memory bus or memory controller, a peripheral bus, an accelerated graphics port, and a processor or local bus using any of a variety of bus architectures. By way of
25 example, and not limitation, such architectures include Industry Standard Architecture (ISA) bus, Micro Channel Architecture (MCA) bus, Enhanced ISA (EISA) bus, Video Electronics Standards Association (VESA) local bus, and Peripheral Component Interconnects (PCI) bus.

[0067] Computer system 800 may include a variety of computer system readable media. Such media may be any available media that is accessible by computer system, and it may
30 include both volatile and non-volatile media, removable and non-removable media.

[0068] System memory 820 can include computer system readable media in the form of volatile memory, such as random access memory (RAM) and/or cache memory or others. Computer system 800 may further include other removable/non-removable volatile/non-

volatile computer system storage media. By way of example only, storage device 840 can be provided for reading from and writing to a non-removable, non-volatile magnetic media (e.g., a “hard drive”). Although not shown, a magnetic disk drive for reading from and writing to a removable, non-volatile magnetic disk (e.g., a “floppy disk”), and an optical disk drive for reading from or writing to a removable, non-volatile optical disk such as a CD-ROM, DVD-ROM or other optical media can be provided. In such instances, each can be connected to bus 630 by one or more data media interfaces.

[0069] Computer system 800 may also communicate with one or more external devices 860 such as a keyboard, a pointing device, a display 870, etc; one or more devices that enable a user to interact with computer system; and/or any devices (e.g., network card, modem, etc.) that enable computer system to communicate with one or more other computing devices. Such communication can occur via Input/Output (I/O) interfaces 880.

[0070] Still yet, computer system 800 can communicate with one or more networks 850 such as a local area network (LAN), a general wide area network (WAN), and/or a public network (e.g., the Internet) via network adapter 855. As depicted, network adapter 855 communicates with the other components of computer system via bus 830. It should be understood that although not shown, other hardware and/or software components could be used in conjunction with computer system. Examples include, but are not limited to: microcode, device drivers, redundant processing units, external disk drive arrays, RAID systems, tape drives, and data archival storage systems, etc.

[0071] As will be appreciated by one skilled in the art, aspects of the present disclosure may be embodied as a system, method or computer program product. Accordingly, aspects of the present disclosure may take the form of an entirely hardware embodiment, an entirely software embodiment (including firmware, resident software, micro-code, etc.) or an embodiment combining software and hardware aspects that may all generally be referred to herein as a “circuit,” “module” or “system.” Furthermore, aspects of the present disclosure may take the form of a computer program product embodied in one or more computer readable medium(s) having computer readable program code embodied thereon.

[0072] Any combination of one or more computer readable medium(s) may be utilized. The computer readable medium may be a computer readable signal medium or a computer readable storage medium. A computer readable storage medium may be, for example, but not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, or device, or any suitable combination of the foregoing. More specific examples (a non-exhaustive list) of the computer readable storage medium would include

the following: a portable computer diskette, a hard disk, a random access memory (RAM), a read-only memory (ROM), an erasable programmable read-only memory (EPROM or Flash memory), a portable compact disc read-only memory (CD-ROM), an optical storage device, a magnetic storage device, or any suitable combination of the foregoing. In the context of this document, a computer readable storage medium may be any tangible medium that can contain, or store a program for use by or in connection with an instruction execution system, apparatus, or device.

[0073] A computer readable signal medium may include a propagated data signal with computer readable program code embodied therein, for example, in baseband or as part of a carrier wave. Such a propagated signal may take any of a variety of forms, including, but not limited to, electro-magnetic, optical, or any suitable combination thereof. A computer readable signal medium may be any computer readable medium that is not a computer readable storage medium and that can communicate, propagate, or transport a program for use by or in connection with an instruction execution system, apparatus, or device.

[0074] Program code embodied on a computer readable medium may be transmitted using any appropriate medium, including but not limited to wireless, wireline, optical fiber cable, RF, etc., or any suitable combination of the foregoing.

[0075] Computer program code for carrying out operations for aspects of the present invention may be written in any combination of one or more programming languages, including an object oriented programming language such as Java, Smalltalk, C++ or the like and conventional procedural programming languages, such as the "C" programming language or similar programming languages, a scripting language such as Perl, VBS or similar languages, and/or functional languages such as Lisp and ML and logic-oriented languages such as Prolog. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer or server. In the latter scenario, the remote computer may be connected to the user's computer through any type of network, including a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider).

[0076] Aspects of the present disclosure are described with reference to flowchart illustrations and/or block diagrams of methods, apparatus (systems) and computer program products according to some embodiments of the present disclosure. It will be understood that each block of the flowchart illustrations and/or block diagrams, and combinations of

blocks in the flowchart illustrations and/or block diagrams, can be implemented by computer program instructions. These computer program instructions may be provided to a processor of a general purpose computer, special purpose computer, or other programmable data processing apparatus to produce a machine, such that the instructions, which execute
5 via the processor of the computer or other programmable data processing apparatus, create means for implementing the functions/acts specified in the flowchart and/or block diagram block or blocks.

[0077] These computer program instructions may also be stored in a computer readable medium that can direct a computer, other programmable data processing apparatus, or other
10 devices to function in a particular manner, such that the instructions stored in the computer readable medium produce an article of manufacture including instructions which implement the function/act specified in the flowchart and/or block diagram block or blocks.

[0078] The computer program instructions may also be loaded onto a computer, other programmable data processing apparatus, or other devices to cause a series of operational
15 steps to be performed on the computer, other programmable apparatus or other devices to produce a computer implemented process such that the instructions which execute on the computer or other programmable apparatus provide processes for implementing the functions/acts specified in the flowchart and/or block diagram block or blocks.

[0079] The flowchart and block diagrams in the figures illustrate the architecture, functionality, and operation of possible implementations of systems, methods and computer
20 program products according to various embodiments of the present invention. In this regard, each block in the flowchart or block diagrams may represent a module, segment, or portion of code, which comprises one or more executable instructions for implementing the specified logical function(s). It should also be noted that, in some alternative
25 implementations, the functions noted in the block may occur out of the order noted in the figures. For example, two blocks shown in succession may, in fact, be executed substantially concurrently, or the blocks may sometimes be executed in the reverse order, depending upon the functionality involved. It will also be noted that each block of the block diagrams and/or flowchart illustration, and combinations of blocks in the block diagrams and/or flowchart
30 illustration, can be implemented by special purpose hardware-based systems that perform the specified functions or acts, or combinations of special purpose hardware and computer instructions.

[0080] The computer program product may comprise all the respective features enabling the implementation of the methodology described herein, and which - when loaded in a

computer system - is able to carry out the methods. Computer program, software program, program, or software, in the present context means any expression, in any language, code or notation, of a set of instructions intended to cause a system having an information processing capability to perform a particular function either directly or after either or both
5 of the following: (a) conversion to another language, code or notation; and/or (b) reproduction in a different material form.

[0081] The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention. As used herein, the singular forms “a”, “an” and “the” are intended to include the plural forms as well, unless the context
10 clearly indicates otherwise. It will be further understood that the terms “comprises” and/or “comprising,” when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

[0082] The corresponding structures, materials, acts, and equivalents of all means or step plus function elements, if any, in the claims below are intended to include any structure, material, or act for performing the function in combination with other claimed elements as specifically claimed. The description of the present invention has been presented for purposes of illustration and description, but is not intended to be exhaustive or limited to
20 the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art without departing from the scope and spirit of the invention. The embodiment was chosen and described in order to best explain the principles of the invention and the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited
25 to the particular use contemplated.

[0083] Various aspects of the present disclosure may be embodied as a program, software, or computer instructions embodied in a computer or machine usable or readable medium, which causes the computer or machine to perform the steps of the method when executed on the computer, processor, and/or machine. A program storage device readable by a
30 machine, tangibly embodying a program of instructions executable by the machine to perform various functionalities and methods described in the present disclosure is also provided.

[0084] The system and method of the present disclosure may be implemented and run on a general-purpose computer or special-purpose computer system. The terms “computer

system” and “computer network” as may be used in the present application may include a variety of combinations of fixed and/or portable computer hardware, software, peripherals, and storage devices. The computer system may include a plurality of individual components that are networked or otherwise linked to perform collaboratively, or may include one or
5 more stand-alone components. The hardware and software components of the computer system of the present application may include and may be included within fixed and portable devices such as desktop, laptop, and/or server. A module may be a component of a device, software, program, or system that implements some “functionality”, which can be embodied as software, hardware, firmware, electronic circuitry, or etc.

10 [0085] Although specific embodiments of the present invention have been described, it will be understood by those of skill in the art that there are other embodiments that are equivalent to the described embodiments. Accordingly, it is to be understood that the invention is not to be limited by the specific illustrated embodiments, but only by the scope of the appended claims.

15

CONCEPTS

[0086] Concept 1. A cryptocurrency system, comprising: one or more processors; and memory storing executable instructions that, if executed by the one or more processors, configure the cryptocurrency system to: communicate with a device of a user; receive body activity data which is generated based on body activity of the user, wherein the body activity
20 is sensed by a sensor communicatively coupled to or comprised in the device of the user; verify if the body activity data of the user satisfies one or more conditions set by the cryptocurrency system; and award cryptocurrency to the user whose body activity data is verified.

[0087] Concept 2. The system of any preceding and/or succeeding Concept(s), wherein the
25 body activity sensed by the sensor comprises at least one of body radiation emitted from the user, body fluid flow, a brain wave, pulse rate or body heat radiation.

[0088] Concept 3. The system of any preceding and/or succeeding Concept(s), wherein the one or more conditions are set based on an amount of human body activity associated with a task which is provided to the device of the user.

30 [0089] Concept 4. The system of any preceding and/or succeeding Concept, wherein the one or more conditions comprise a condition that the body activity data represents that the user performs a task provided to the device of the user.

[0090] Concept 5. The system of any preceding and/or succeeding Concept(s), wherein the body activity data is generated using a hash algorithm converting human body activity into

an encryption output, and the generated body activity data comprises a hash of the sensed body activity of the user.

5 [0091] Concept 6. The system of any preceding and/or succeeding Concept(s), wherein the body activity data comprises one or more vectors produced from the body activity sensed by the sensor.

[0092] Concept 7. The system of any preceding and/or succeeding Concept(s), wherein the one or more conditions include a condition that the hash of the body activity includes repeated patterns or a mathematical property set by the cryptocurrency system.

10 [0093] Concept 8. The system of any preceding and/or succeeding Concept(s), wherein the cryptocurrency system awards the cryptocurrency to the user by generating a block for the awarded cryptocurrency and adding the block to a blockchain stored in the cryptocurrency system.

15 [0094] Concept 9. The system of any preceding and/or succeeding Concept(s), wherein the block comprises data comprising: a task provided to the device of the user; information on the awarded cryptocurrency; a hash associated with the body activity; and a hash of a previous block.

[0095] Concept 10. The system of any preceding and/or succeeding Concept(s), wherein the task provided to the device of the user comprises a test for verifying if the user of the device is human or not.

20 [0096] Concept 11. The system of any preceding and/or succeeding Concept(s), wherein the cryptocurrency system is configured to: receive, from the device of the user, data of the body activity generated before the hash algorithm is applied and the hash of the body activity; rehash the data of the body activity; and compare the rehashed data with the hash of the body activity received from the device of the user to verify the body activity data.

25 [0097] Concept 12. A computer-implemented method, comprising: receiving, by a device of a user coupled to a network, a task over the network; sensing, by a sensor communicatively coupled to or comprised in the device of the user, body activity of the user; generating body activity data based on the sensed body activity of the user; verifying, by a cryptocurrency system communicatively coupled to the device of the user, if the body activity data satisfies one or more conditions set by the cryptocurrency system; and
30 awarding, by the cryptocurrency system, cryptocurrency to the user whose body activity data is verified.

[0098] Concept 13. The method of any preceding and/or succeeding Concept(s), wherein the body activity sensed by the sensor comprises at least one of body radiation emitted from

the user, body fluid flow, a brain wave, pulse rate or body heat radiation.

[0099] Concept 14. The method of any preceding and/or succeeding Concept(s), wherein the one or more conditions are set by the cryptocurrency system based on an amount of human body activity associated with the task provided to the device of the user.

5 [00100] Concept 15. The method of any preceding and/or succeeding Concept(s), wherein the verifying if the body activity data satisfies the one or more conditions comprises determining if the body activity data represents that the user performs the task provided to the device of the user.

[00101] Concept 16. The method of any preceding and/or succeeding Concept(s),
10 wherein the verifying if the body activity data satisfies the one or more conditions comprises determining if the body activity data represents more than an amount of the body activity set by the cryptocurrency system.

[00102] Concept 17. The method of any preceding and/or succeeding Concept(s), wherein the body activity data is generated using a hash algorithm converting human body
15 activity into an encryption output, and the generated body activity data comprises a hash of the sensed body activity of the user.

[00103] Concept 18. The method of any preceding and/or succeeding Concept(s), wherein the body activity data comprises one or more vectors produced from the body activity sensed by the sensor.

20 [00104] Concept 19. The method of any preceding and/or succeeding Concept(s), wherein the verifying if the body activity data satisfies the one or more conditions set by the cryptocurrency system comprises determining if the hash of the sensed body activity includes repeated patterns or a mathematical property set by the cryptocurrency system.

[00105] Concept 20. The method of any preceding and/or succeeding Concept(s),
25 wherein the awarding the cryptocurrency comprises generating, by the cryptocurrency system, a block for the awarded cryptocurrency and adding the generated block to a blockchain stored in the cryptocurrency system.

[00106] Concept 21. The method of any preceding and/or succeeding Concept(s), wherein the block comprises data comprising: the task provided to the device of the user;
30 information on the awarded cryptocurrency; the generated hash associated with the body activity; and a hash of a previous block.

[00107] Concept 22. The method of any preceding and/or succeeding Concept(s), wherein the task comprises a test for verifying if the user of the device is human or not.

[00108] Concept 23. The method of any preceding and/or succeeding Concept(s),

further comprising: receiving, by the cryptocurrency system, from the device of the user, data of the body activity generated before the hash algorithm is applied and the hash of the body activity; rehashing, by the cryptocurrency system, the data of the body activity; and comparing, by the cryptocurrency system, the rehashed data with the hash of the body activity received from the device of the user to verify the body activity data.

[00109] Concept 24. A device, comprising: one or more processors communicatively coupled to a sensor, the sensor configured to sense body activity of a user; and memory storing executable instructions that, if executed by the one or more processors, configure the device to: receive a task; generate body activity data based on the sensed body activity of the user, wherein the sensed body activity is associated with the received task; and transmit the generated body activity data to a system or network which verifies the body activity data to award cryptocurrency.

[00110] Concept 25. The system of any preceding and/or succeeding Concept(s), wherein the body activity sensed by the sensor comprises at least one of body radiation emitted from the user, body fluid flow, a brain wave, pulse rate or body heat radiation.

[00111] Concept 26. The system of any preceding and/or succeeding Concept(s), wherein the body activity data is generated using a hash algorithm converting human body activity into an encryption output.

[00112] Concept 27. The system of any preceding and/or succeeding Concept(s), wherein the body activity data comprises one or more vectors produced from the body activity sensed by the sensor.

[00113] Concept 28. The system of any preceding and/or succeeding Concept(s), wherein the body activity data is generated by producing one or more vectors from the body activity sensed by the sensor and encrypting the one or more vectors.

CLAIMS

1. A cryptocurrency system, comprising:
 - one or more processors; and
 - memory storing executable instructions that, if executed by the one or more processors, configure the cryptocurrency system to:
 - communicate with a device of a user;
 - receive body activity data which is generated based on body activity of the user, wherein the body activity is sensed by a sensor communicatively coupled to or comprised in the device of the user;
 - verify if the body activity data of the user satisfies one or more conditions set by the cryptocurrency system; and
 - award cryptocurrency to the user whose body activity data is verified.
2. The system of claim 1, wherein the body activity sensed by the sensor comprises at least one of body radiation emitted from the user, body fluid flow, a brain wave, pulse rate or body heat radiation.
3. The system of claim 1, wherein the one or more conditions are set based on an amount of human body activity associated with a task which is provided to the device of the user.
4. The system of one of claims 1-3, wherein the body activity data is generated using a hash algorithm converting human body activity into an encryption output, and the generated body activity data comprises a hash of the sensed body activity of the user.
5. The system of one of claims 1-3, wherein the body activity data comprises one or more vectors produced from the body activity sensed by the sensor.
6. The system of one of claims 1-3, wherein the cryptocurrency system awards the cryptocurrency to the user by generating a block for the awarded cryptocurrency and adding the block to a blockchain stored in the cryptocurrency system.
7. The system of claim 6, wherein the block comprises data comprising:
 - a task provided to the device of the user;
 - information on the awarded cryptocurrency;
 - a hash associated with the body activity; and
 - a hash of a previous block.
8. The system of claim 3, wherein the task provided to the device of the user comprises a test for verifying if the user of the device is human or not.
9. The system of claim 4, wherein the cryptocurrency system is configured to:

receive, from the device of the user, data of the body activity generated before the hash algorithm is applied and the hash of the body activity;
rehash the data of the body activity; and
compare the rehashed data with the hash of the body activity received from the device of the user to verify the body activity data.

10. A computer-implemented method, comprising:

receiving, by a device of a user coupled to a network, a task over the network;
sensing, by a sensor communicatively coupled to or comprised in the device of the user, body activity of the user;

generating body activity data based on the sensed body activity of the user;

verifying, by a cryptocurrency system communicatively coupled to the device of the user, if the body activity data satisfies one or more conditions set by the cryptocurrency system; and

awarding, by the cryptocurrency system, cryptocurrency to the user whose body activity data is verified.

11. The method of claim 10, wherein the body activity sensed by the sensor comprises at least one of body radiation emitted from the user, body fluid flow, a brain wave, pulse rate or body heat radiation.

12. The method of claim 10, wherein the one or more conditions are set by the cryptocurrency system based on an amount of human body activity associated with the task provided to the device of the user.

13. The method of one of claims 10-12, wherein the body activity data is generated using a hash algorithm converting human body activity into an encryption output, and the generated body activity data comprises a hash of the sensed body activity of the user.

14. The method of one of claims 10-12, wherein the body activity data comprises one or more vectors produced from the body activity sensed by the sensor.

15. The method of claim 13, further comprising:

receiving, by the cryptocurrency system, from the device of the user, data of the body activity generated before the hash algorithm is applied and the hash of the body activity;

rehashing, by the cryptocurrency system, the data of the body activity; and

comparing, by the cryptocurrency system, the rehashed data with the hash of the body activity received from the device of the user to verify the body activity data.

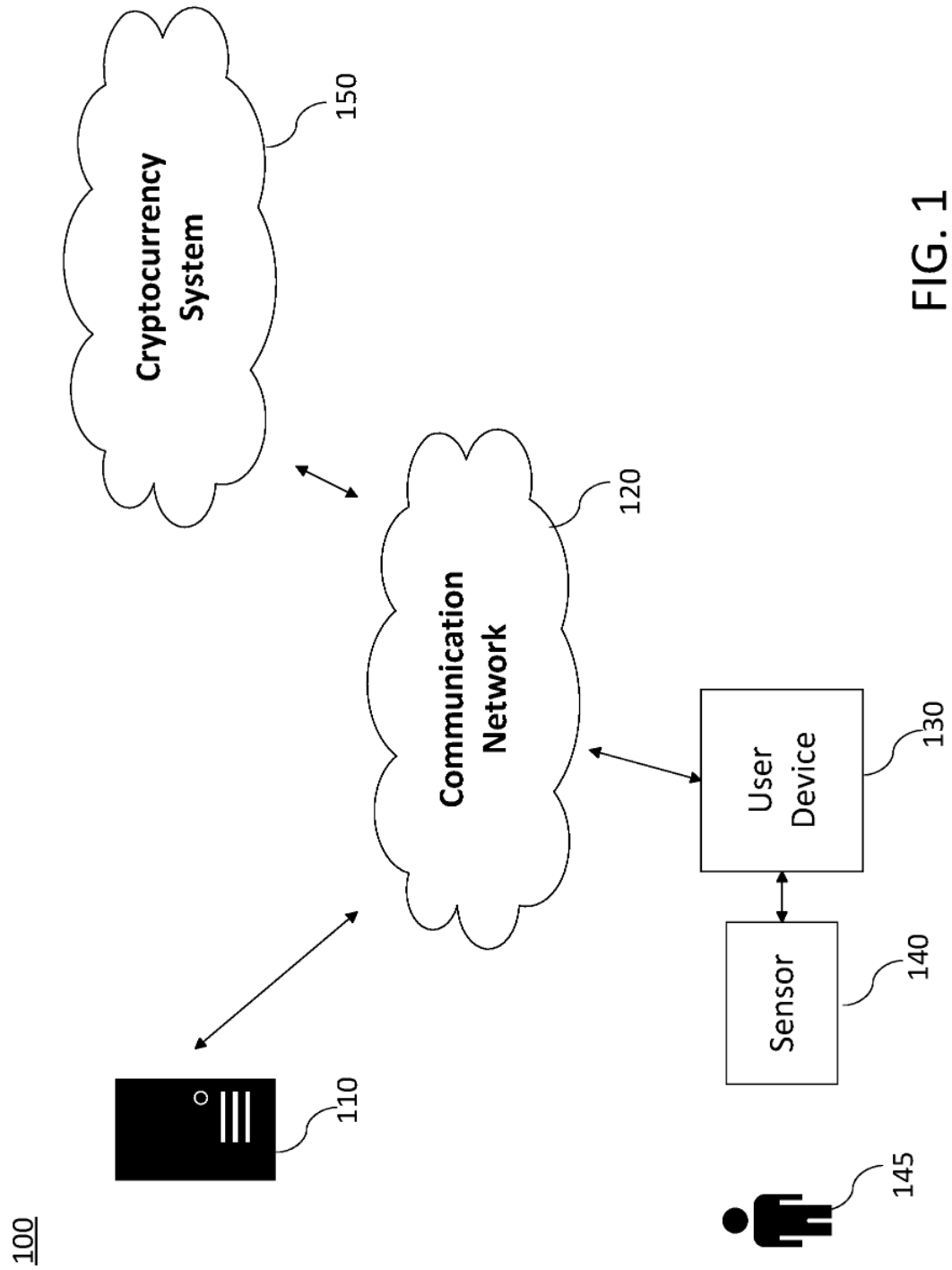


FIG. 1

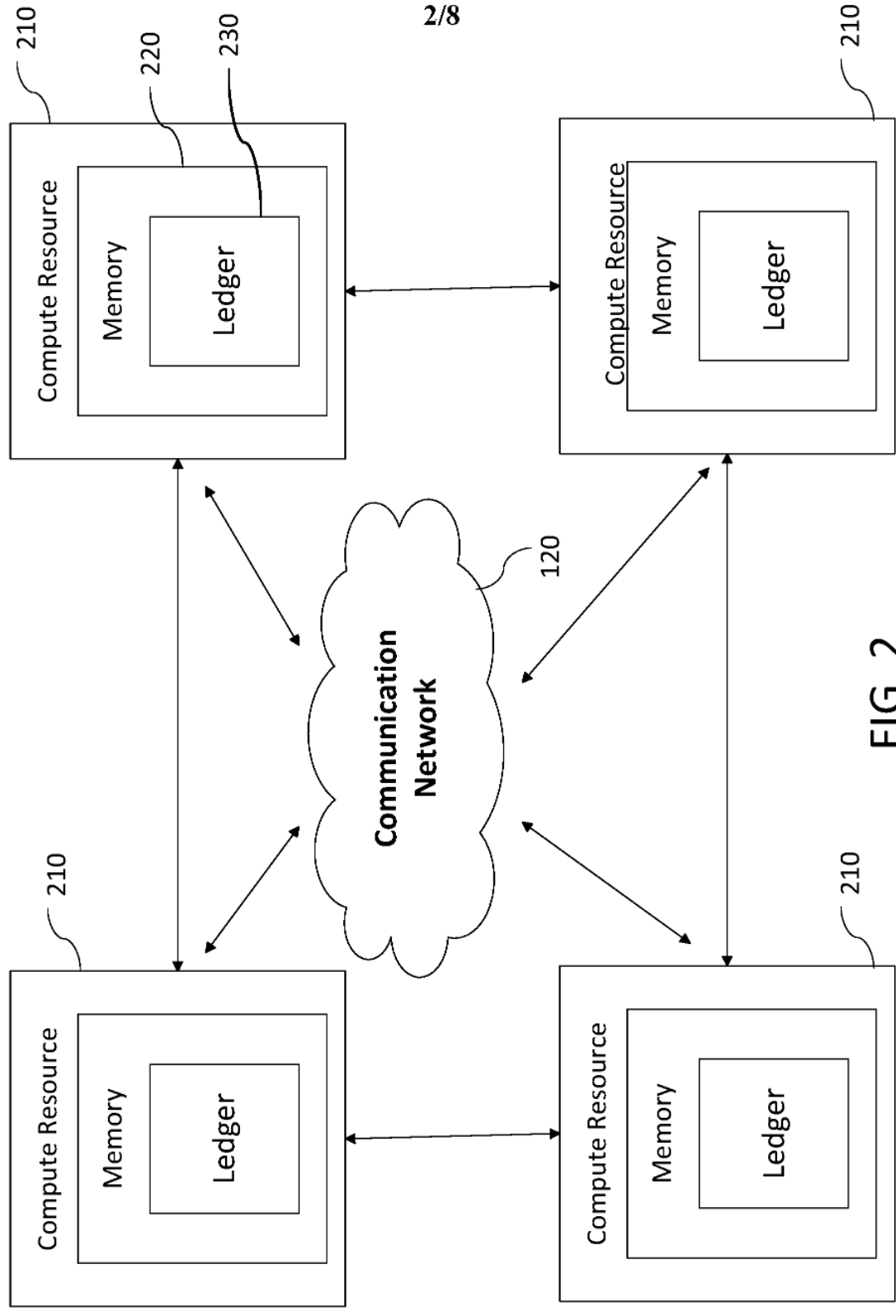


FIG. 2

200 (150)

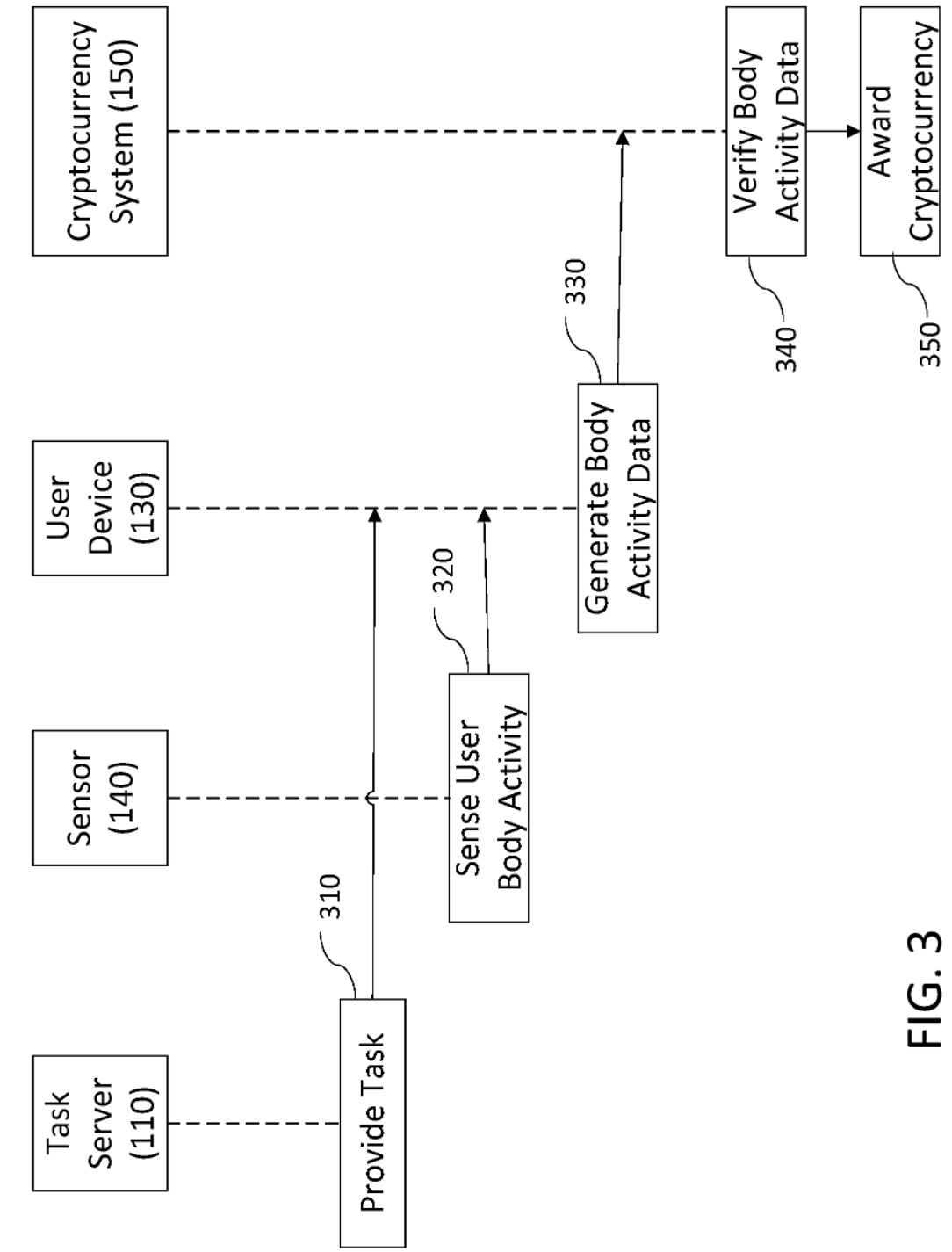
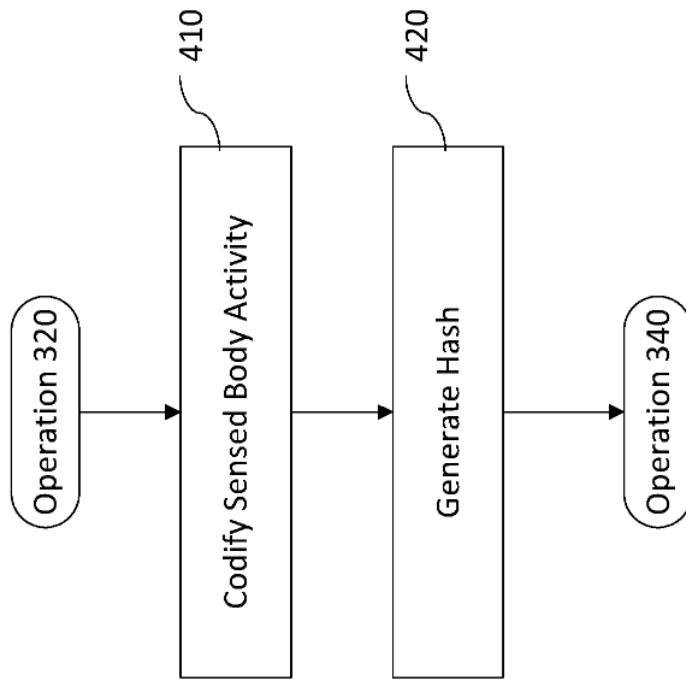


FIG. 3

300

356



330

FIG. 4

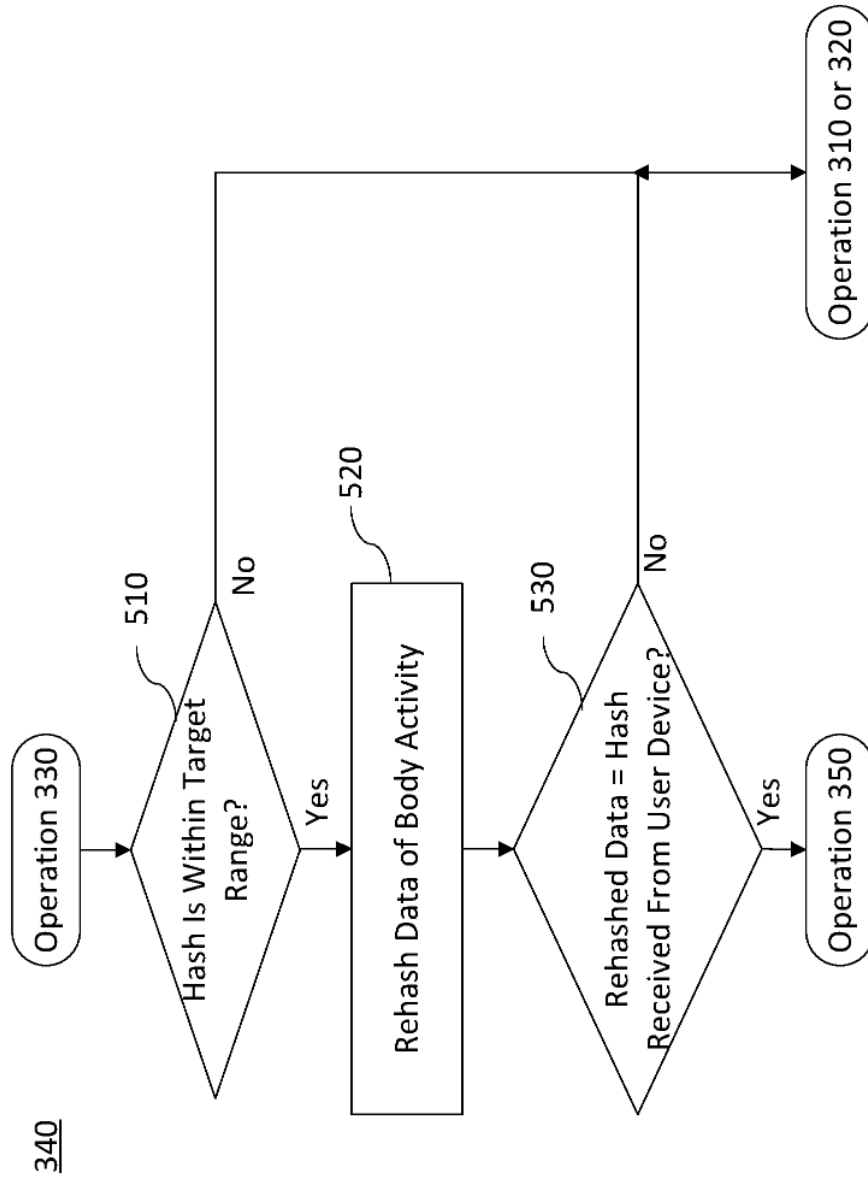


FIG. 5

6/8

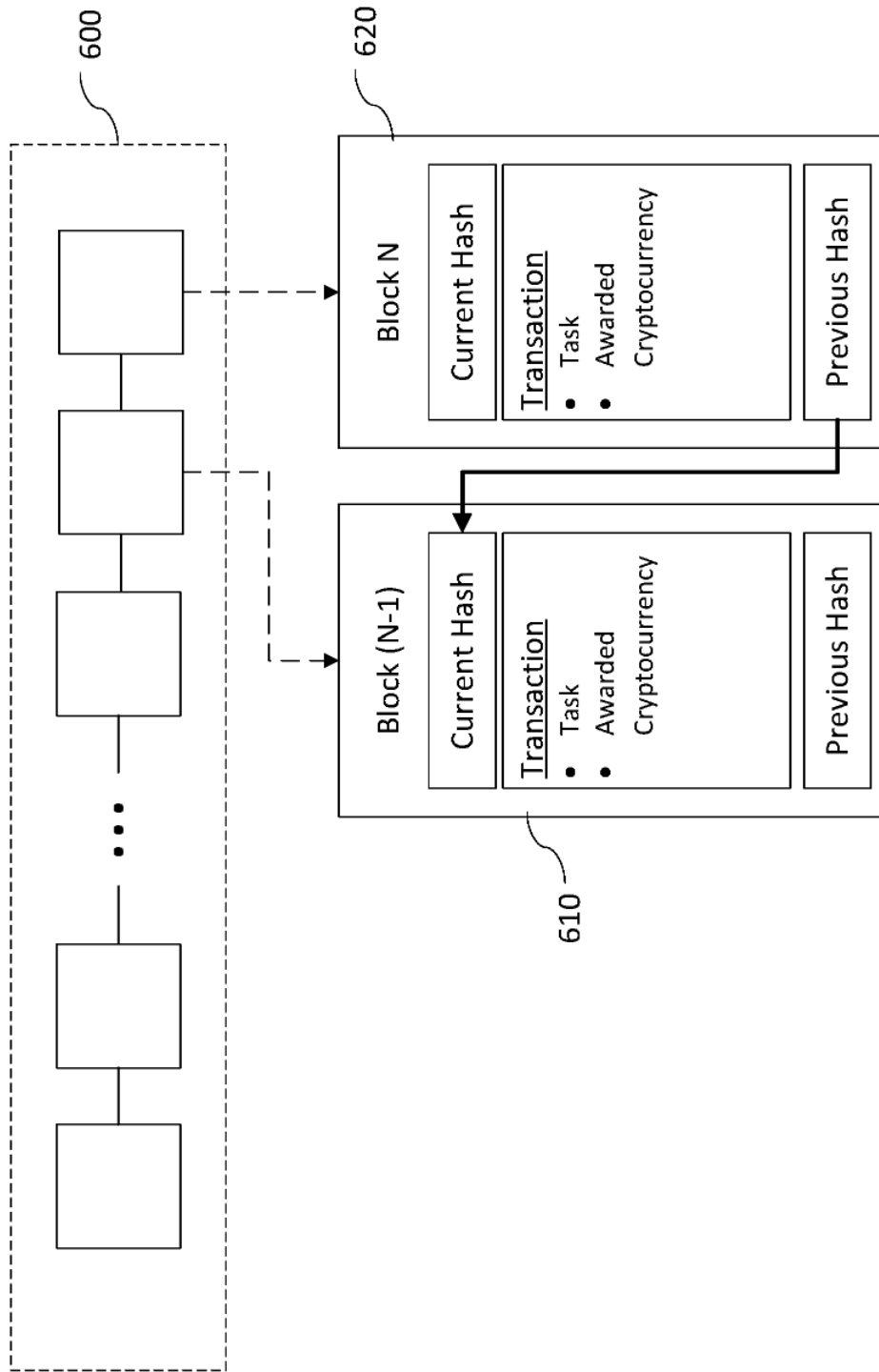


FIG. 6

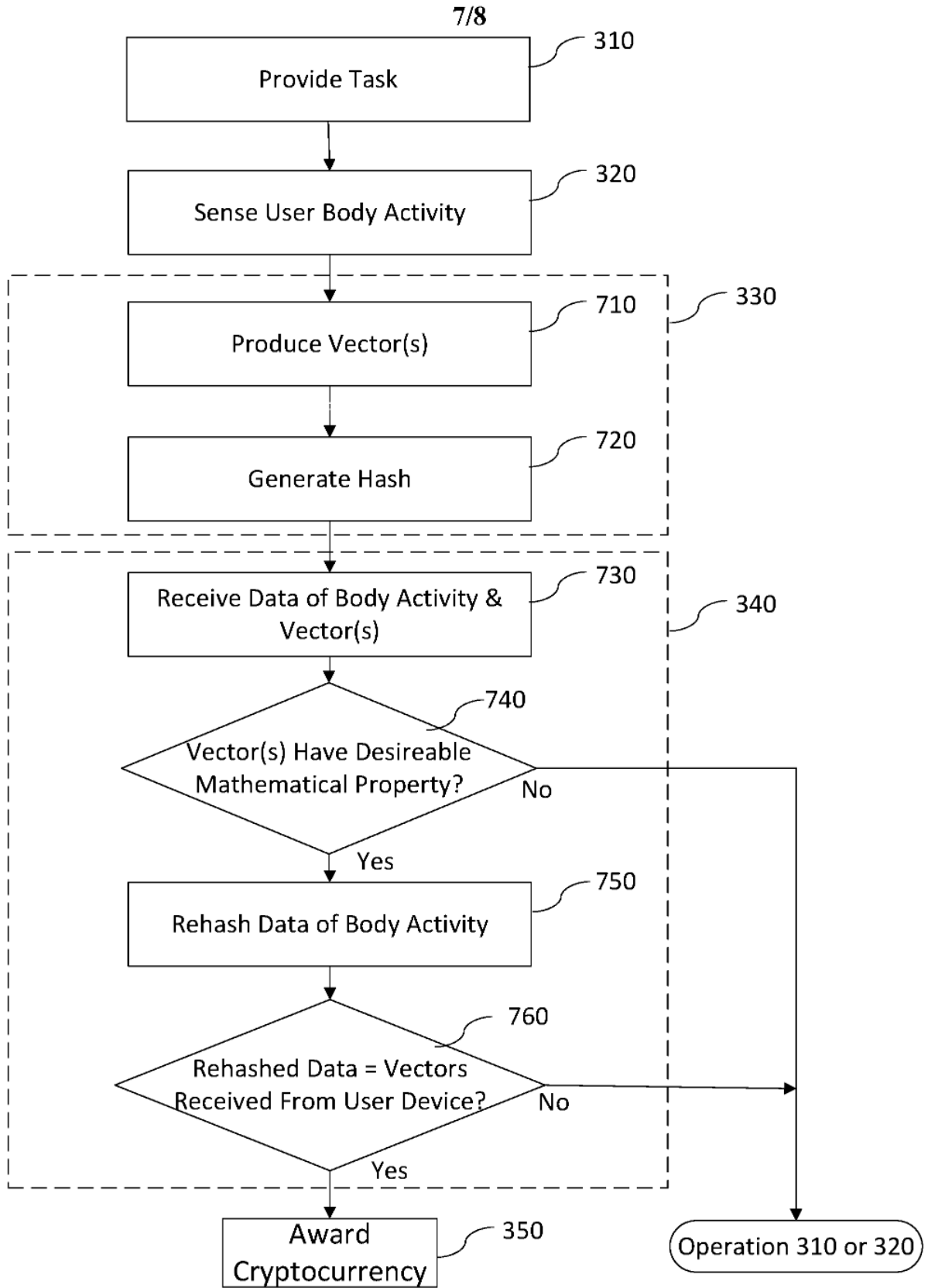


FIG. 7

360

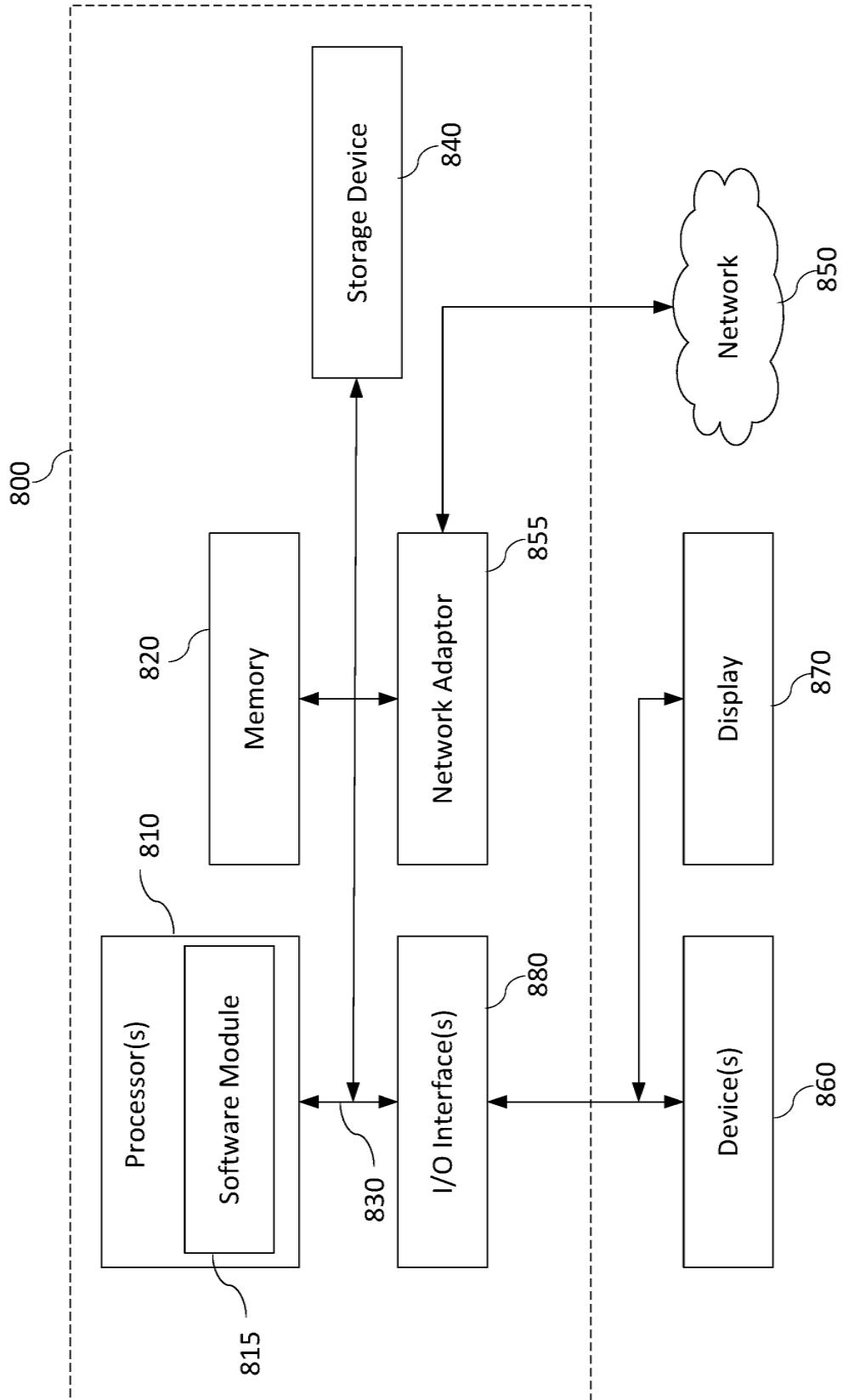


FIG. 8

INTERNATIONAL SEARCH REPORT

International application No
PCT/US20 19/038084

A. CLASSIFICATION OF SUBJECT MATTER
 INV. G06Q20/06 G06Q20/32 H04 L9/32 G06Q30/02 G06N3/08
 ADD .
 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 G06Q H04 L G07G G06N
 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 EPO - Interna l , WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Neurogress ET AL: "MECHATRONIC SYSTEMS CONTROL VIA NEURAL INTERFACE NEUROGRESS", 8 February 2018 (2018-02-08), XP055612926, Retrieved from the Internet: URL:https://s3.eu-central-1.amazonaws.com/icostars-whitepapers/d525e659fddaebc1186474abc02142360577982f85787d1086372b1f0668f4c0.pdf [retrieved on 2019-08-14] the whole document ----- -/--	1-15

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 14 August 2019	Date of mailing of the international search report 27/08/2019
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Veshi, Erzim
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2019/038084

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>Lisa Barwick: "Researchers help digital currency users get more rewards for exercising", 14 August 2017 (2017-08-14), XP055613045, Retrieved from the Internet: URL:https://warwick.ac.uk/newsandevents/pressreleases/researchers_help_digital/ [retrieved on 2019-08-14] the whole document</p>	1-15
A	<p>----- US 2018/247191 A1 (KATZ RANDALL M [US] ET AL) 30 August 2018 (2018-08-30) paragraph [0069] - paragraph [0124] -----</p>	1-15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2019/038084

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2018247191 A1	30-08-2018	US 2018247191 A1	30-08-2018
		US 2018341861 A1	29-11-2018
		US 2018373983 A1	27-12-2018
		US 2018373984 A1	27-12-2018
