

# AjoChhand brain



## A white paper on AjoChhand brain building project

“We consider that neuron is not the only element that processes information, we consider brain as fractal architecture and every single element in the layered architecture contributes equally to the information processing of the brain. Second, we completely reject the hypothesis that linear set of arguments manipulating randomness in various ways could emulate the complexity of the brain. Instead, we believe that we need a completely new geometric language of nested rhythm to process information in the fractal architecture.”

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# Artificial Brain Building: a new approach to induce another industrial revolution

There are hundreds of artificial brain models; yet, an extensive search goes on to find the right one. Why are we looking for emulating the brain? We are now all convinced that the complexity of ever-increasing data would be so critical that we will not be able to identify accurate weight of interacting parameters within a finite time. If this had been only about the amount of data, the issue could have been resolved by now. It is purely about intelligence, the evolving relationship between highly interacting parameters. There are several approaches, the first and the foremost is an accurate circuit description of the neural circuit, it is assumed that if we know how neuron wires then we would inevitably understand the intelligence as is. For that purpose, Govt agencies and the private companies are investing enormous resources primarily spent in two directions, first, identifying innovative routes to accurately describe the neural circuit, second, relating the information processing of the circuit with extremely deep machine learning algorithm.

Currently, scientific community is well convinced that be it a Govt agency or a corporate house, the key to future industry holds in the hands of the lucky one who gets the two major criteria right and fuse them appropriately. We are also in the adventure with three unique features; our route is very different from all of them put together. First we do not consider that neuron is not the only element that processes information, we consider brain as a fractal architecture and every single element in the layered architecture contributes equally to the information processing of the brain. Second, we completely reject the hypothesis that linear set of arguments manipulating randomness in various ways could emulate the complexity of the brain. Instead, we believe that we need a completely new geometric language of nested rhythm to process information in the fractal architecture.

How different it is? For example, any deep learning language that does very well for the face recognition, is not good for detecting the natural object or motion, for different kind of objects we need very distinct programs, even to detect particular events we need distinct programs. A grand unification of intelligence is essential among multiple locally applicable intelligence protocols that would include any object any event and any sensory signal, a universal protocol would detect and reproduce anything and learn anything, perception and all incredible features of the brain must originate from that singular algorithm. This is not possible with the existing "black box" model. We need a mechanistic approach where every single feature of the brain intelligence is related to the hardware. Therefore, for the first time we carry out a massive project to experimentally measure the nested rhythms of every single part of the brain, determine exactly, what the rhythms are, at the same time, we convert sensory signals in terms of a few geometric shapes, using a singular generic algorithm, which act as grammar for the new language.

AjoChhand (Ajeya~Invincible, Chhandam~rhythm) brain a musical device where every single thought is carefully articulated songs, it is the language of the universe. Our experiment finds certain brain features as scale independent and every living nonliving things are nested rhythms of different time width "guests" in the "host" universe. Several issues, like fractal space-time mathematics profound in our own brain research, -all these mathematics live in the astrophysics research wisely. Using a common OFS metric (symmetrization of ordered factors of natural numbers), we are working to regenerate all astrophysical events of the universe using the same artificial brain AjoChhand simulator.

Here, in this document we have critically analyzed the project, basic features and several of its policies. Enjoy reading. This material is exclusively produced for the masters thesis of Lokesh Agrawal, and sole property of National Institute for Materials Science (NIMS) Japan. Copy & reproduction of its any part without prior permission from NIMS is prohibited.

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## Ten fundamentals of the Nested Rhythm Computing:

1. **Nested clocks and nested rhythm (ChandaJala):** Each system operates within a finite time domain, as a periodic rhythm. A biosystem adjusts with another by changing mass and symmetry of its structure finally to eliminate the time gap between two oscillating rhythms, a system uses shorter space to process faster time, its all about managing "time".
2. **Fractal fusion in the hardware (MilonoOntoroBahiro):** Within a finite time domain X, a system constructs itself as superposition of multiple iterative function system fractals. Entire domain is a single pixel of a larger fractal and each pixel of domain X has an entire fractal inside, the vertical journey constitutes an escape time fractal. Thus, it ensures power scaling law.
3. **Definition of information, decision-making, objective of computing (Samayanuborti):** Information is a nested rhythm, decision is a transition from one nested rhythm to another to eliminate overall time gap. Eliminating time gap of slowest rhythms is a priority. The system senses and adjusts, does not compute.
4. **Mathematics of self-evaluation of the machine (DuroDarpan):** Self-evaluation is the ability to sync at a complete mirror image of the internal nested network outside the physical structure of a system. Degree of consciousness is the ratio of two weighted averages of density and volume of resonance bands, one for the body under consideration and the other is that of the universe, around the system that executes self-evaluation.
5. **Geometric language (JyamicBhasa):** Biosystems are designed to exhibit triplet of triplet resonance bands, each peak with a distinct phase, this helps to generate all possible rhythms that represents basic 1D, 2D, 3D geometrical shapes. The language uses such elementary rhythms to nest complex network of rhythms as language of the system's sensing and adjusting process with the environment.
6. **Symmetry of the structural components (BortulaBrittoChhando):** Spiral & spherical symmetric duality is the key to all structural components of this system. Symmetry is time, the time lapses when there is a breaking of symmetry.
7. **Space time metric of multi-verses (KolponaChhondeYatra):** The network of the hardware is built by oscillators whose fundamental resonance frequencies change by factors of number system. Prime numbers creates gap between different oscillators. The factor-number plot creates space-time metric for the operating system, transition between oscillators are estimated as feedback function by generalized imaginary numbers where  $i$  varies 0 to 1.
8. **Equivalence of Truth table (OsimoJureBirajo):** "Infinite or incomplete logic" is such that if a small part of its truth table is zoomed, we find another truth table and we can zoom the derived truth table further, the journey continues forever. Thus, infinite network only redistributes energy locations at various symmetry points of the "programmable matter".
9. **Equivalent of Turing machine (Atmostho-Bistar-Rupantar-Prosar):** Instead of Turing machine's four tuples, here the machine that replaces "computation" with "sensing and adjusting" uses four steps. 1. Resonate to absorb external nested rhythms. 2. Expand to activate all associated internal rhythms. 3. Phase transition of expanded nested rhythm network to another, fourth, the difference rhythm reply back and transform the internal hardware to adjust time gaps of rhythms.
10. **Materials synthesis protocol (UchhaSmritiSanghanan):** Systems use higher-level control on the memory of reaction kinetics, it requires to adjust mass exchange for the oscillators frequency tuning. However, during reaction the growth of oscillator structure is a condensation at far from equilibrium wherein convergence runs at multiple singularity points.

Turing based computing	Our nested rhythm approach
<p>The Turing machine operation protocol is the following, Address-read-write-move. A tape writer moves to address a bit and reads it, if necessary writes something if not transmits the information and moves to another site.</p>	<p>An external nested rhythm (ENR) “Resonate” with internal network of rhythm (INR). “Expand” is triggering the internal nested rhythms to a drive for expansion that leads to “self-assembly of arguments”. “Phase transition” one nested rhythm transforms into another. “Spontaneous reply back” is the fourth step to adjust INR with ENR.</p>
<p>Units of information &amp; information processing protocol: Neuron firing acts as a switch, 0 and 1 states are information, flipping between 0 and 1 is the fundamental event of information processing, Godel completeness philosophy</p>	<p>Follows Godel’s incompleteness philosophy, nested rhythm is not an isolated or discrete packet, to explain any event outside information is must. Every nested rhythm that apparently delivers a discrete decision holds inside a large number of nested rhythms and itself is part of a larger nested rhythms. Its an infinite logic computing.</p>
<p>Rejection of several choices is a part of computing, for this reason, huge amount of energy is spent.</p>	<p>No decision is rejected. E.g. our current version of artificial brain uses 864 frequencies to encode all possible rhythms, now energies are re-distributed among these channels changing the weight distribution, a fixed amount of energy input could run computer forever if leakage is blocked.</p>
<p>Intelligent search algorithms are used for searching, it needs wiring to run logic.</p>	<p>Due to spontaneous reply back, it performs search without searching, right answer spontaneously responds, so, no circuit is required.</p>
<p>Memory is a conducting state or a finite static value, that distincts itself, could be a fixed color, spatial position of a state is important in a tape.</p>	<p>Periodic or nearly periodic rhythm is a form of memory that covers multiple time scales, memory is space-time invariant. Memory is associated to group of cyclic rhythms, hence memory is context based, and perception comes from higher-level nested network.</p>
<p>Takes input and output via machine-user interface. Inside machine, there is a circuit that transmits a physical entity like electron or photon or just energy (could be nothing for quantum entanglement) to execute a program to run the tape</p>	<p>The user, operational world and the machine are locked perpetually into a unified network of rhythms, hence asses threat via perception. Local composition of rhythms builds spontaneous relationship in time scale, thus writes autonomous program (self-assembly of arguments).</p>
<p>Questions need to be asked until it reaches to a simple “yes” or “no” answer level, hence, step by step all logical arguments is required to be known precisely. Someone must know analysis &amp; encode.</p>	<p>Fractal network of oscillators absorbs hierarchical network of rhythms, using geometric language all information is unraveled, via expansion all decisions (one rhythm switch to another) are accessed. Thus, logic is auto-programmed.</p>
<p>The machine operation time depends on the number of logical steps required to execute a problem. This also depends on the switching speed of reduction step.</p>	<p>The computing time is fixed irrespective of complexity, as at every moment all tapes, all rhythms and all decisions are active, energy redistribution time is constant.</p>
<p>The tape is linear, everything is sequentialized, thus, natural events that are nested rhythms, essentially discretized neglecting true relations.</p>	<p>To encompass complex nested rhythms, specially designed “escape-time-iterative-function-fused-fractal” tape is needed. True relationships are maintained, they are not lost in discretization.</p>
<p>The tape cannot write program hence cannot self-evaluate and improve during the course of time.</p>	<p>Since user-environment-machines are integrated by hierarchical network of rhythms, during weight distribution, majority of states where weights are supreme could locate outside the physical limit of the machine. In that case, the machine could mirror its own nested rhythms therein, thus, could evaluate itself &amp; modify.</p>

## Ten fundamentals of the Nested Rhythm human brain model:

1. **12 triplet of triplet (3X3=9) resonance frequency bands: Alternate energy source (AstaSataKrishna):** Resonance bands are frequencies at which a system prefers to vibrate. A protein exchanges ions at certain frequencies, electrons at other frequencies. Neurons exchange solitons, ac currents at one band, neuro-transmitters at another. We consider all possible carriers that a material can support, but only look at the frequencies that they can support.  $12 \times 9 = 108$  bands operate by zillions and zillions of proteins at 300K gets 5-6THz energy at every moment. This energy drains out to 108 bands. ATP source is one among many; we bring all alternative sources possible, even sound and mechanical motion as source of energy.
2. **Neuron rewires by ionic firing, all carriers do only mechanics (TaritNirdeshaYantrikKarma):** Neural firing causes mechanical thrust for neurons to move dendritic and axonal branches. Neuron firing contributes to one of 108 bands. Just like, proteins mechanically vibrate to switch conformation; mechanical drives are primary for all elements, all carriers. Mechanical interaction runs by ac signals, ions; carriers help operating "time" at various scales, not all carriers are suited for all scales.
3. **Nested rhythms, one femto seconds to several thousands of years, time period (KalaChakra):** Starting from a few atoms that vibrate periodically a zillion times a second to a process that has period of a million years. For a process to be slow, we do not have to live a million years, it can still run. Metaphor: life is just one wave of a slow rhythm, just one computation.
4. **Birth, addition, subtraction, division, multiplication, transformation and death of rhythms (JivanaChakraChhanda):** Resonance frequency has specific phase, together they create a rhythmic cycle. Decision rhythms are born with a rule to transform into another rhythm. Self-assembly or associative expansion of rhythms, phase transition all process occur via addition, subtraction, division or multiplication of rhythms. If an element loses symmetry, a rhythm dies.
5. **Geometric language (JyamiticBhasa):** In 108 resonance bands,  $864 + 108 + 36 + 12 + 3/4 + 0/2 + 1 = 1024$  or 1027 types of frequencies make system, distribute energies among its peaks such that periodic only a few frequencies values hold major part of energy which rounds in circle to make rhythm. These frequencies adopt a ratio from which one can draw 1D, 2D, 3D geometrical shapes. The frequencies could be ionic firing, high & low frequency ac transmissions, mechanical waves etc.
6. **Perform searching without a search (Sotosphurto):** The brain converts all problems into intractable 3D Clique problem and due to spontaneous "reply", solves the searching instantly. Due to nested clock structure, the element with which we interact, the fastest response time of this element is "instantaneous" for us, but inside it, nested clocks run orders faster to deliver solutions of the "Clique" problems that we read as "instantaneous".
7. **Learning is higher-level perception (UrdhoChitoSiksha):** Statements are primary rhythmic cycles, decisions are logical switching from one cycle to another, learning is connecting multiple decisions and factual cycles using a smaller f thus larger T cycles. Perception is abstract rhythms that primarily looks at the pattern of decision & statement rhythms, finds symmetry in distribution/organization of those rhythms, constructs a rhythm using those features. Abstract rhythms are perceptions.
8. **Nested simulation of the future (OsimoJureBirajo):** "Feedback" is replaced by future simulation. A mirror image is projected starting from a single rhythm cycle, which runs very fast rhythm in the nested network to the top, very slow rhythms. Considering multiple choices for each rhythm, the system gets several choices of nested rhythms. The choices trigger running several local rhythms, which were never active in the nested network, the ripple is "future simulation". Ripples originate from mirror image of nested network, propagate and modulate the decision/transformation rhythms.
9. **Creation of new hardware & recreating network (Atmostho-Bistar-Rupantar-Prosar):** Nested simulation of future may create ripple rhythms that is not deleted, completely new learning may generate ripple rhythms, all these features edit hardware, ripples made of rhythms with smaller time range re-wires locally, giant ripples demand new functional modules for neutralization. Thus, brain evolves continuously at all levels, processing is not bottom-up or top-down, its allover, always.
10. **Sequential and parallel processing (UchhaSmritiSanghanan):** Long distance fibers made of millions of neural wires makes single molecule like giant oscillators feasible. In a single molecule, transmission is purely quantum, but in giant oscillators potential fluctuations among various parts are simultaneous, because of our Escape-time tape, generic imaginary i exists, so its quantum-like. Thus, sequential and parallel processing is a perceptual error, its simultaneous processing.

Existing artificial brain building projects	Our nested rhythm approach
<b>Objective: Instruction execution machine, objective is to follow coded instructions as is.</b>	Automated “time” adjustment machine, objective is to minimize time gap between various rhythms.
<b>Units of information &amp; information processing protocol: Neuron firing acts as a switch, 0 and 1 states are information, flipping between 0 and 1 is the fundamental event of information processing</b>	Firing is not considered as an element of information processing, its one of 12 bands. From protein’s to the cortical column there are interconnected nested clocks running 12 distinctly coupled rhythms, each rhythm cycle is an unit of information. Therefore, information unit is a periodic function of nonlinear energy chain that has contribution of every single element of entire system. Fundamental event is sync and desync of rhythms.
<b>Research protocol: Replicate a real animal brain’s neural wiring, create similar looking firing in a computer, using random function.</b>	A lifelike simulator that reads, sees or listens to writing, image or song, converts into nested rhythm and turn that into neuron circuits. The circuit reads any image as rhythm, matches with its own, to encode unmatched rhythmic parts changes its wiring, if large changes required in wiring, it selects neurons and fires. The simulator reads any circuits to unravel embedded information be it image or sound or writing.
<b>Neural circuit firing is not related to information input directly. Stochastic randomness in firing pattern is used to run black box machine learning algorithms to find arbitrary function that matches the random behavior. That function predicts future.</b>	Various types of oscillations interconnected as nested rhythms collectively define direct information, “black box” is not used. Nested rhythm grows and restructures as complexity of information increases, simulates “future”. No algorithm is written, externally. Thus, rhythms as “real information” that re-generates everything encoded.
<b>Intelligent decisions are written explicitly in the software, nothing is done outside the written code. Unpredictability is programmed. Particular algo works for a very specific job</b>	Intelligence is spontaneous association in the nested rhythms. The simulator has one universal geometric language based program applicable to all jobs, it behaves like a “programmable matter”, i.e. it self-programs.
<b>The prospects for improvement: 1. Mapping higher resolution neuron wiring, better, more accurate circuit description. 2. detailed &amp; deeper machine learning algorithm. Better map, better Algo.</b>	Enabling the neural circuit of Simulator to create new neurons and edit its rhythms for larger associations makes it more intelligent. Entire wiring changes at various scales and that is matched with real live animals (e.g. simulator is artificial life so it and living rat listens to same song, we match their firing as our simulator also fires)
<b>Decision making means rejecting several choices and opting for the one that perfectly meets the criteria.</b>	Energy redistributes in the non-linear energy chain, one rhythm transform into another. No decision is rejected. In the simulator, the probability distribution redefined, hence all options remain, user can select the worst option.
<b>Retrieving the database or big data accurately by intelligent search is the key target for all intelligent softwares (demands to include all neuroscience data in the brain, a global effort runs)</b>	Retrieving the associations among different interconnected rhythms is key to its intelligence (demands to include all known rhythms in the brain and the body, a global effort is initiated)
<b>Believes in “finite logic” philosophy, if computers are enhanced sufficiently high speed, with huge memory, making artificial brain is a matter of time. Correct statement under finite logic.</b>	Believes in “incomplete logic”. Current computer architecture cannot hold it. To encompass complex nested rhythms, specially designed “escape-time-iterative-function-fused-fractal” hardware is needed. Brain jelly 1.0 is synthesized, Brain jelly 2.0 is under development.
<b>Resource is finite: Neural circuit acts a sequential and parallel current flowing machine, number of decisions is proportional to the elements encoded in the hardware.</b>	Resource is infinite: Each side of the 3D circuit geometry gets a new nested rhythm. Number of decisions is not proportional to number of elements. Infinite directions receive infinite number of rhythms from a single circuit.

## Ten fundamentals of the Brain jelly:

1. **Matter that programs nested rhythms:** Nested rhythm of any biological intelligent network could be uploaded into the organic brain jelly. The organic jelly could also self-assemble nested rhythms in a complex network and organic molecules would emulate a structure so that via mechanical, electromagnetic, ionic or even by exchanging polar or non-polar molecules the supramolecular architecture would exhibit the comprehended nested rhythm network.
2. **A perpetual, spontaneously evolving supramolecule:** Since the geometry of supramolecular architecture is fusion of escape time (ET) and iterative function system (IFS) type fractals, within the domain of fixed geometries there are scopes for structural evolution at all scales. Largest and the smallest structures evolve minimal, towards the center, evolution is rapid.
3. **Synthesis protocol at various levels of supramolecule:** An unique condensation where molecular systems condense, as multiple singular points (i.e. energy levels) drag the system simultaneously to them (far from equilibrium). An unique chemical reaction wherein reaction constant is a function of time and editable. An unique protocol for the fusion of fractal reaction kinetics and cascade synthesis.
4. **Self-healing and regeneration of an entirely lost component:** Since organic supramolecular network implements a singular nested network of rhythms, if some parts go missing additionally supplied materials pour in and emulate the structure once again. Note that memory is written nowhere, just because of the working principle, even a lost organ is self-re-generated.
5. **Elementary component molecules:** Different molecular system engages into different kinds of fractal architecture creation, condensation at different singular points and responds to different triplet-triplet resonance band, which is the key channel for self-assembly of a large number of molecules. In order to generate an equivalent hardware for the nested rhythm of a sub-organ, cluster of processing modules, essential molecules are supplied into the jelly.
6. **Ageing and degradation:** Initially brain jelly is more like a liquid, as time passes by, with learning, rigid circuits form. Major structural changes become increasingly difficult. Provisions are kept to replace molecular systems, however, transport through several micro and nano channels is not smooth, the deposition increases with time and degradation fixes self-life.
7. **Losing conscious operation & sleeping is inevitable:** If major, higher level nested rhythms are disrupted, brain jelly operates only locally, global operation disrupts (losing consciousness). If there is a major mismatch between the nested rhythm inside and externally learnt, then brain jelly is driven into massive works to evolve. This causes hysteresis and demand long defragmentation of rhythms and updates the circuits (sleeping).
8. **Nested rhythm based sensory network has to be an integral part:** Nested rhythm creation happens at the sensor itself, hence no conventional sensor works here, we build massive sensory network that converts all sensory inputs into a compositions of well-defined geometric shapes, and eventually a nested rhythm. The language of brain jelly is universal.
9. **Learning by adjusting time: Massive motor control for sensors has to be integral part:** Just like human brain learns by drive for food, reproduction and safety of body primarily, composite drives are born thenceforth; brain jelly is encoded with basic drives which then constructs its own nested rhythm. According to that nested rhythm, if brain jelly wants to capture suitable input, it needs a massive complex sensor-manipulation motor controls (like cerebellum), & instant calculator of nested rhythms to be encoded in the hardware (hippocampus) are essential for the brain jelly to evolve.
10. **Fundamentals that never changes: permanent control inputs:** 1. Basic learning rules based on which nested network of learning is constructed are supplied by user externally. 2. Self-healing rules does not allow designing new molecules for its evolution. 3. Its own nested rhythms are now allowed to edit, this is done by coupling internal nested network of rhythms with a network outside. These three controls enables user to use this system as machine.

## Ten fundamentals of the Nested Rhythm Universe:

1. **Rhythm connects everything (Chhandajala):** All system operates within a finite time domain, using quasi-periodic rhythm. A rich-rhythm system adjusts with another by changing mass and symmetry of its structure finally to eliminate the time gap between two oscillating rhythms. Systems at all spatial scales, only manage "time" using "rhythms", smaller are faster.
2. **A single design everywhere (MilonoOntoroBahiro):** Within a finite time domain  $X$ , a system constructs itself as superposition of multiple iterative function system IFS fractals. Entire domain is a single pixel of a larger fractal and each pixel of domain  $X$  has an entire fractal inside, the vertical journey is an escape time ET fractal. Fusion of IFS and ET constitutes every single element of the universe. Thus, it ensures power scaling law and a Resonance chain.
3. **Information, Column of speeds, objective of universe (Samayanuborti):** Information is a nested rhythm, decision is a transition from one nested rhythm to another to eliminate overall time gap. Eliminating time gap of slowest rhythms is objective of universe. The system senses and adjusts, inhomogeneously. Time passes as symmetry breaks, for gravity time to break symmetry is  $c$ , for quantum its faster, solitons much slower, universe is a column of limiting speeds i.e. function of symmetry. Classical/quantum differences are illusions of symmetry breaking in the speed column.
4. **Origin of consciousness of a machine (DuroDarpan):** Self-evaluation is the ability to sync at a complete mirror image of the internal nested network outside the physical structure of a system. Degree of consciousness is the ratio of two weighted averages of density and volume of resonance bands, one for the body under consideration and the other is that of the universe, around the system that executes self-evaluation. Consciousness increases as bandwidth and density increase.
5. **One universal language (JyamicBhasa):** Systems are designed to exhibit triplet of triplet resonance bands, each peak with a distinct phase, this helps to generate all possible rhythms that represents basic 1D, 2D, 3D geometrical shapes. The language uses such elementary rhythms to nest complex network of rhythms as language of the system's sensing and adjusting with the environment. Everything in the universe follows one language. Geometry of space defines allowed symmetries, that defines resonance patterns, wherefrom time unfolds. Same space with different carriers give different patterns i.e. times.
6. **Symmetry, limits, life & deaths of the universe (BortulaBrittoChhando):** Spiral & spherical symmetric duality is the key to all structural components of this system. Symmetry is time, the time lapses when there is a breaking of symmetry. Since symmetry is not a function of size, there is no Plank scale or upper limit of the universe, objective of its evolution is to add slower rhythm, so, it is living its life, death is disintegration of resonance chain, or nested rhythm, it happens if any element is created that harms the nested rhythm formation.
7. **Universal space-time fractal (KolponaChhondeYatra):** The network of the hardware is built by oscillators whose fundamental resonance frequencies change by factors of number system. Prime numbers creates gap between different oscillators. The factor-number plot creates space-time metric for the operating system, transition between oscillators are estimated as feedback function by generalized imaginary numbers where  $i$  varies 0 to 1. Resonance is negative/positive.
8. **Origin of universe (OsimoJureBirajo):** As we zoom inside any point of this universe, the journey continues forever, yet, if we expand the similar mathematics of symmetry, we get: 1. Existing universe is a sphere and part of a larger spiral. 2. It would die if nested rhythm is broken, would take birth again, there is no guarantee, and with death, broken rhythm's information is lost forever. 3. With a set of nested rhythm a new universe is born, depending on system's configuration one system becomes a dead object (chair table) or alive like life forms, it can hold many lives inside, life=nested rhythm.
9. **Universal force (Atmostho-Bistar-Rupantar-Prosar):** All four forces are illusion, "column of speeds" express nuclear, electric, magnetic, gravitation, (mass is a fractal space-time of photons, spin is high-speed cyclic symmetry breaking or rhythm). "Thriving to time minimization" is singular property of symmetry breaking, and the symmetry breaks to adjust time. A circle cannot complete its journey, because something from outside perturbs it, hence the "thriving to minimize time gap" is born.
10. **Origin of matter, space (UchhaSmritiSanghanan):** Systems use higher-level control on the memory of reaction kinetics; it requires adjusting mass/energy exchange for the oscillators frequency tuning. However, during reaction the growth of oscillator structure is a condensation at far from equilibrium wherein convergence runs at multiple singularity points. Thus, infinite network only redistributes energy locations at various symmetry points of the "programmable matter".

*Our research is only on the brain, but, since we found that nested rhythm of human's conscious life is  $\sim 10^{30}$  orders varying frequency packet, which is a guest inside nested rhythm packet of the universe with  $10^{80}$  orders of frequency packets (could be more), we define the universe's structure, formation, metric etc to simulate universe using brain.*

<p><b>Existing models of universe</b></p>	<p>Our nested rhythm approach</p>
<p><b>Space-time metric of different nature defines a single point in this universe. It could be given the shape of a string (say string theory) or bubble etc.</b></p>	<p>Every single point of a given universe (lower resolvable pixel of a given universe, escape point or EP of ET fractal) is a door to another universe. This point is a spherical lens with the diameter of a prime number, we cannot see it, but see through; either side we observe spheres with the diameter of neighbor to that prime number. All spheres except the primes are illusions, made of composition of spirals inside; all spirals are made of elementary spheres.</p>
<p><b>The smallest dimension is plank world; there is a upper boundary of the universe. Universe expands like a balloon due to big bang, or combination of big bang and big pop.</b></p>	<p>Spirals form continuously as energy packets fail to complete a circular path or period everywhere in the universe. This is why universe expands. There is no Plank world or even any upper limits of the universe, it never expands like a balloon, it's a spiral continuously trying to complete the cycle; there was never a big bang. Natural number's "ordered factor" plotted against numbers symmetrically creates OFS fractal that is typically self-unsimilar over an infinite natural number system. If just number of ET pixels is given in any structure, one can derive from OFS the allowed symmetry, find neighbors, asses contributions (generalized imaginary number feedback) calculate frequency &amp; possible rhythm sequences. EP configuration is only variable in this view.</p>
<p><b>Structural evolution: from Higgs boson to the evolution of giant clusters of galaxies, physics is different everywhere; not converged yet.</b></p>	<p>ET-IFS metric forms a spiral as motion of a circular energy transmission generates a spiral, this is the origin of rhythm in the universe and no rhythm ever completes its path. This picture has to be true in the Higgs Boson to the ultimate end structures. Due to OFS fractal the spirals self-assemble to form a sphere and then the sphere starts building a spiral. The duality continues at all scales. This is one verifiable principle of structural evolution</p>
<p><b>Symmetry and symmetry breaking is the most fundamental operation in the universe that could eventually led to grand unification theory (GUT).</b></p>	<p>As said above, number of EP configuration is the only variable, one can determine allowed symmetry, frequency &amp; allowed rhythms (not time, one frequency value could generate infinite time). The property of natural numbers would unify all four forces and deliver GUT eventually.</p>
<p><b>There exists a cyclic universe theory, proposed by Einstein 1930 and several others. Roger Penrose proposed Aeons.</b></p>	<p>There are no cycles, no need to inspire by life cycles and impose this on universe. Life cycle is local, for death of a life form, atoms and planets do not die. Life cycle of all objects (stars to humans) is an exercise of a set of nested rhythms to remain in sync with that of the universe's nested rhythm. Death is disintegration due to fail in sync.</p>
<p><b>Mass is a curved space-time, life is an intelligent composition of mass and energy.</b></p>	<p>Universe at the smallest scale is a spiral trying to complete a circular path and so at the largest scale, obviously in this course of action if between two EPs an unique IFS composition is made, if it's frequency density FD and bandwidth within a given range of symmetry BS is large it becomes a mass. Life has same definition as mass, product of FD and BS determines the ability to mirror universe's</p>

	nested rhythm inside the structure, this is degree of life.
<b>Universe is a fractal, or universe is a hologram, there is self-similarity everywhere.</b>	Because of the unique OFS fractal like metric controlling our universe view, it is not ideally a fractal, spherical spiral duality, its largely asymmetric non-self-similar. Consequently, one cannot find entire universe information at a single point, so it is not at all a Hologram. There are certain similarities, however, since natural numbers ensure increment of non-self-similarity over time, it's a situation more like increasing entropy, but just opposite to Holographic or fractal universe
<b>There are many fictional stories like "inflation after big bang", "many baby universes", "black hole universe", "warm hole structure" etc.</b>	From OFS metric, and our protocols like ET-IFS system, generalized imaginary number induced feedback, generating symmetry, thenceforth frequencies and rhythms we can generate basic information, which needs to be used in rigorous mathematical calculations to emulate similar events, until then, no conclusions could be made.
<b>Origin of fundamental constants is still a mystery.</b>	Since OFS metric is an infinite metric, in a given structural universe it is not possible to find all terms of fundamental constants, however, it should be possible to create some terms of all from the basic geometric shapes associated with OFS. Thus, OFS is single source of all information.
<b>Information of the universe or language of the universe is not known and this particular issue is left unattended until GUT is found. Only universal statement is "entropy is increasing".</b>	There is a geometric language of the universe and one can simulate astrophysical events just from OFS. Therefore, mathematical proofs using arguments is not the key here. From a singular metric OFS, singular IFS + ET hardware protocol, feedback from generic imaginary number feedback we can generate astrological events to local events in a life cycle. Of course, mathematical proofs are not always absolute, arguments find substance within certain domain of applications.
<b>There is a major contradiction on the speed of light c, general theory of relativity suggests maximum speed is c and quantum entanglement suggests faster than the speed of light.</b>	In a nested rhythm network, it's a spiral made of spheres everywhere, part of a singular nested waveform, those particles, which are sensitive to feel the waveform shows that, entanglement is nothing but response of a particle to keep the waveform intact.
<b>Both derivations, classical to quantum and quantum to classical are feasible. Quantum is derived by adding unpredictability in classical and classical is derived by adjusting the time delay in quantum. Still the convergence is not so comprehensive.</b>	In our nested rhythm network picture of the universe, allowed symmetries is the first fundamental parameter derived from OFS, from that, first operational parameter frequency is derived, combining symmetry and frequency, rhythm is derived, from which mass and time is derived. Time is breaking symmetry sensed by another breaking symmetry event. Since in a given universe, observer/machine is a nested rhythm network, and it has a upper and lower time limit of breaking symmetry event, thus, problem between classical and quantum is all about interaction of two classes of nested rhythm network. If a universe resides beneath single resolved pixel, any particle floating in part of the waveform would find events changing instantaneously, i.e. at infinite speed.

## Development versions of AjoChhand neural network simulator:

*Any deep learning algo efficient to recognize face is not good for detecting the natural object or motion, for different kind of objects we need very distinct programs, even to detect particular events we need distinct protocols. A grand unification of intelligent algos is essential among multiple locally applicable intelligence protocols that would operationally include any object any event and any sensory signal, a universal protocol would detect and reproduce anything and learn anything, perception and all incredible features of the brain must originate from that singular algorithm. Its beyond "black box" model. We need a mechanistic approach where every single feature of the brain intelligence algo is related to the hardware's property. Therefore, for the first time we carry out a massive project to experimentally measure the nested rhythms of every single part of the brain, determine exactly, what the rhythms are, at the same time, we convert sensory signals in terms of a few geometric shapes, using a singular generic algorithm, which act as grammar for the new language. Intelligence, information processing all are composing music.*

**AjoChhand 1.0: Basic:** A computer simulator based cortical column assembly that does everything a brain does, acquire sensory data as input, build the neural network, modify circuit geometry as required for learning and then from the modified circuit geometry, anyone can retrieve images and everything encoded into it. For example an input movie or song or story is saved into a set of frequencies and from a set of frequencies we retrieve entire images, songs, just like a "real" human brain.

**AjoChhand 2.0: Management:** We add multiple sensory modules side by side in a singular platform. The simulator incorporates an analogue of hippocampus for managing "language learning", "creative painting", "composing music", "identifying speech" etc. Hippocampus based management and automated creation of necessary functional modules for information processing would be the key for this version. Add nucleus, and several local micro-management module options.

**AjoChhand 3.0: Perception:** The simulator incorporates the analogue of forebrain for generating collective perception among various learning networks. Higher-level perception is encoded even in a single cortical column assembly, however, not for the multiple functional modules. Here, higher-level perceptions are allowed to grow by itself.

**AjoChhand 4.0: Nested Clock management:** Including features to run time clocks for managing various tasks, thoughts, in the mid brain a special management center is kept to control millions of time bound jobs or thoughts. This is important for the simulator brain to do any work. Every single thoughts of entire brain is connected so that millions of tasks are executed with its virtual clock management

**AjoChhand 5.0: Machine control:** Introduce an artificial analogue of cerebellum, production house of millions of instructions for the sensors and machines connected to it for acquiring better data for analysis.

**AjoChhand 6.0: Self-evolution of hardware:** Introduce controls to add new sensory systems, global re-wiring management for correcting major circuit errors during self-learning. Introduce the control for self-de-fragmentation and arranging it, the brain would work 24X7, to improve its circuits and reorganize it by itself.

**AjoChhand 7.0: Self-learning:** Key rules for automated learning to be incorporated in the system, so that the simulator can automatically set control parameters for the automated data acquisition, does not become a random learner. Basic rules in the artificial analogue of the mid brain would enable the system to control all sensory and processing system.

**AjoChhand 8.0: Simulate futuristic outcome:** As a general concourse to information processing, the network could execute search to find the patterns of unknown events and determine learning laws from estimation of threats, predict and analyze threats, future prediction, construction of nested network of futuristic events. This module would be connected to the data acquisition. Futuristic analysis would be an integral part of every single element of the entire simulator.

## Development versions of Brain jelly:

*Brain jelly is a completely organic, synthetic supramolecular architecture that is a programmable matter. It emulates nested rhythms in its network. A grand unification of several unique materials synthesis protocols is essential among multiple locally applicable self-assembly protocols that would operationally include any object any event and any sensory signal as resonance frequency of a material, a universal protocol would detect and reproduce anything and learn anything, perception and all incredible features of the brain must originate from that singular algorithm. Its beyond "black box" model. We need a mechanistic approach where every single feature of the brain intelligence is related to the hardware's property. Therefore, for the first time we carry out a massive project to experimentally measure the nested rhythms of every single part of the brain, determine exactly, what the rhythms are, at the same time, we convert sensory signals in terms of a few geometric shapes, using a singular generic algorithm, which act as grammar for the new language. Intelligence, information processing all are composing music, that's the language of brain jelly.*

**Brain jelly 1.0: Basic:** Using a single fractal seed molecule generate massively complex architectures from nano-scale to the scale visible to naked eye. In this version, we demonstrate fractal reaction kinetics, cascade synthesis and logic gate with infinite truth table. These are fundamental to replicate rhythms; we demonstrate emulating a rhythm in a chemical beaker. Fractal seeds are made of three life like features, molecular machine, molecular sensor and molecular multilevel switch. Infinite logic gate is created by introducing cyclic energy loop, this is elementary rhythm.

**Brain jelly 2.0: Management:** We add several molecules and create composite architectures. Several unique kinds of geometries and evolving neural network like circuits physically in the chemical beaker. We allow simultaneous creation of various different kinds of circuits in a single chemical beaker; all processing various different kinds of nest rhythms and no systems inhibit each other.

**Brain jelly 3.0: Perception:** In this version we include features to allow system creating nested rhythms by itself, thus spontaneous evolution of circuits, fatigue (sleeping) and auto-recovery from fatigue, then perpetual interaction with the changing environment.

**Brain jelly 4.0: Nested Clock management:** We add hippocampus like system created by nested rhythm network and enable coordination among all components and introduce a control on spontaneous creation of nested rhythms, thus enable learning of the system. We also allow widening the frequency band of operation so that the system engages into a large time domain.

**Brain jelly 5.0: Machine control:** We introduce creation of nested rhythm based sensors and cerebellum like control system again to regulate input information, thus adding a further control on the learning process.

**Brain jelly 6.0: Self-evolution of hardware:** Introduce controls to add new sensory systems, global re-wiring management for correcting major circuit errors during self-learning. Introduce the control for self-de-fragmentation and arranging it, the brain would work 24X7, to improve its circuits and reorganize it by itself.

**Brain jelly 7.0: Self-learning & self-healing:** Key rules for automated learning to be incorporated in the system, so that the simulator can automatically set control parameters for the automated data acquisition, does not become a random learner. We would allow channels and chemical routes for the self-healing under damage and protect under natural degradation as exchanging non-functional modules become critical with more learning.

**Brain jelly 8.0: Simulate futuristic outcome:** As a general concourse to information processing, the network could execute search to find the patterns of unknown events and determine learning laws from estimation of threats, predict and analyze threats, future prediction, construction of nested network of futuristic events. This module would be connected to the data acquisition. Futuristic analysis would be an integral part of every single element of the entire brain jelly.

## Deliverable products we envision from AjoChhand computing:

- 1. Constructing a global database platform for nested rhythm network of an entire human brain: (AjoChhandajala):** No brain building projects study nested rhythms. We create a worldwide team to work together to create a database of brain rhythms, one can edit the open source platform. <http://nanobrain.tech.com/brainrhythmstore/>
- 2. A new holographic information storage: Fractal seed based data shrinking/retrieval (BramhaChaturbhuj):** Our simulator shrinks any sensory data only to a few bits and regenerate entire information to its original accuracy. The 3D geometry in which information is packed is like a hologram. <http://nanobrain.tech.com/fractome/>
- 3. 24X7 survey and predict future events in an extremely complex scenario: Threat analysis and prediction: Nested future prediction (SombedanSil):** A part of our human brain simulator is that it predicts future at every spatio-temporal scale. Therefore, our simulator can spread over internet, safeguard, predicts threat early. <http://nanobrain.tech.com/threatsimulate/>
- 4. Self-taught software (STS): Remote space application robot's brain (SawyamSidhdha):** The simulator is designed to self-learn rules by trying, it follows our newly invented geometric language. <http://nanobrain.tech.com/spontelearn/>
- 5. Mechanical/electromechanical instrument design: Radical design proposals for unique mechanics and electronics (YantraTattwa):** Beyond Newtons laws, manipulating machines with Reynaulds number, spiral symmetry based piezo-pyro-ferroelectric materials for electromechanics. <http://nanobrain.tech.com/spiroferro/>
- 6. Mindbook, an alternative social media where, complex music & pattern effects are generated for delivering the true message of the mind, nullify misunderstanding (AntaraTomo):** In most of the cases we are not able to convey message properly, but if a music accompany the message, that contains all hidden feelings into it and treat us like an unique synesthetic patient? <http://nanobrain.tech.com/socialgalactica/>
- 7. Growing massive 3D architecture: An advanced version of 3D printing where higher level chemical memory and condensation (SmritiSamkoch):** We have developed a unique memory protocol in the synthesis, wherein advanced level intelligence could be used and synthesis could run in a loop until the entire architecture is constructed. "Nano to visible scale integrated chip production." <http://nanobrain.tech.com/chemicalmemory/>
- 8. Medical treatment using music and rhythms: Increase aging to 120 years (SuroSusthi):** We have killed cancer cells using mobile phone and our specific singing molecule, not we plan to cure advanced diseases. By pumping nested rhythms, balance is retrieved in disordered living system. "Musiceutical" <http://nanobrain.tech.com/musiceutical/>
- 9. Infinite logic hardware based on BrainJelly: Replace conventional machines using circuits that fuse "ET Fractal" and "IF fractal" (AnondoGhono):** Brain jelly learns rhythms, and evolves its circuits, if we solidify this jelly, permanent intelligent processors are made, and this is "Nano brain" for Robots. Since perpetually evolving circuits may turn erroneous, this would ensure reproducible industrial production. <http://nanobrain.tech.com/robotbrain/>
- 10. Breathing & biodegradable machines, uses all kinds of carriers in harmony (BortulaBritto):** Since we have explored the fourth circuit element in a unique way we used nested rhythm concept of human brain to self-assemble billions of machines mimicking resonance chain at all scales, with ionic, magnetic, electronic, optical, thermal carriers. "Breathing ultra-thrust engine", "Fractal bandwidth sensors". <http://nanobrain.tech.com/breathmechanics/>