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Research paper

Design and implementation of AIS instruments using big data and AI approaches

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Abstract

This paper present the theoretical aspect of inventing a new device which is called as an Artificial intelligence system (AIS) is a Automatic medical device is a self-detection diseases machine to identify the trace element & recognizing the diseases and advising the patients to be aware of their health. A trace element is an element (e.g., lead, selenium, arsenic) that is present in a human body and it is very small, making it a challenge to measure them accurately. This research focus is on trace elements that are in the human body and the proposed to devise (now in theoretical aspect) a new medical device to identify all the trace elements in the human body and recognizing the diseases and checking the health of the people because they are essential for proper growth. All essential elements are for human nutrition. . It can be helpful to cure many diseases in future at home itself. The death ratio can also be reduced and human can live longer. The people can check their daily nutrition using this one.

Keywords: *Elements; Diseases; Level; Artificial Intelligence*

1. Introduction

This proposed kit or device will check the components or the elements in a body of a human being or any other creatures (animals) and provide the description of medicines to take. There is no need of doctor in future if this kit is designed. Generally human body contains lot of chemical element, gaseous elements. When these chemical level increases or decreases there is a chance for diseases. These have to be checked periodically and if there is any changes occur then this kit will advise the person to take the specific food or medicine. The people need not to go to hospital and consult a doctor. By regularly checking with this device it will alert them to take proper food. A man can live happily without caring about the diseases. The computer concepts such as Artificial intelligence and data mining techniques to be adopted to know the patients symptoms and can make decision according to them to provide medicines. Any kind of disease can be found by using this device and regulates the body function normally.

All human body will be constructed up from claiming components and ought to be accessible in right extent with be sound without whatever ailments. His or her rate in the muscle to varies starting with one representative will someone else. On the rate may be increments or abatements after that there is an opportunity from claiming a significant number sicknesses in the constitution. This suggested gadget will Figure an estimation about every component in the body Furthermore it presentation those symptoms, diseases, prescriptions and additionally exhortation should detract those vital nourishment. This will be those help of the kin over future and this gadget could make conveyed crazy toward an individual effectively Furthermore cam wood check it by the individuals itself. On future there will be no compelling reason for specialist though this gadget may be effective this paper require those data about follow component majority of the data should devise a AIS. The estimation will be 98% of the constitution impostor about mamoncillo will be settled on up about nine nonmetallic components. Those four principles are sodium, magnesium, potassium, furthermore calcium constitute over 1. 89%, same time whatever is left 0. 02% alternately 8. 6 g of a normal mankind's Grown-ups is aggravated dependent upon from claiming 11 average follow components. However, this minor portion exerts an enormous impact with respect to the greater part form capacities. Practically of them intervene key biochemical responses toward acting Likewise a cofactor alternately impetus for a lot of people proteins. They also go about as that focal point about fabricating balancing out structures for example, proteins Also proteins. Those aggregation for metals alternately lack about these components might handle maladies. Those emulating would those watched components a while ago in the physique Furthermore infections distinguished practically.

1.1. Essential elements for human body

Basically 4 organic elements these are H, C.N, O and quantity elements are Na, Mg, K, Ca, P, S, Cl.
Some more trace elements are Mn, Fe, Co, Ni, Cu, Zn, Mo, Se, I.
The specifies the biochemical functions are Li, V, Cr, B, F, Si, As.

1.2. Categorical classification of trace elements

There are 29 various types of elements including metal and nonmetal in human body. These 29 elements are categories into 5 groups.

a) Group I: These components would the fundamental parts of macromolecules for example, carbohydrates, proteins, What's more lipids. The components having a place to these gatherings would carbon, hydrogen, oxygen, Furthermore nitrogen.

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b) Group II: These would nutritionally essential minerals. They would also call similarly as vital components alternately macro components. Their Everyday prerequisite for a mature person human will be over 100 mg/day. The lack of such components normally turns out deadly mishap unless intervened legitimately. The components having a place should this bunch are sodium, potassium, chloride, calcium, phosphorous, magnesium, sulfur microbes.
c) Group III: There would the fundamental follow components. A component is called concerning illustration follow components when their prerequisite for every day will be the following 100 mg and insufficiency prompts issue Also might demonstrate deadly mishap. The components having a place on this aggregation are copper, iron, zinc, chromium, cobalt, iodine, molybdenum, Also selenium. Of these, iodine is a nonmetal, same time others need aid metals.
d) Group IV: They need aid extra follow components. Their part is not reasonable What's more they might be key. Those components having a place on this gathering would cadmium, nickel, silica, tin, vanadium, Furthermore aluminum.
e) Group V: This aggregation of metals may be not crucial their vicinity might transform poisonous quality. They have no known work in the human body. The components having a place will this assembly would gold, mercury, cyanide, and lead.

1.3. The trace element and their level and symptoms of diseases

Copper assumes a imperative part done our digestion system it permits a significant number discriminating proteins should capacity legitimately. Acidic states push that solvency which incorporates copper ions possibly to cupric type or cuprous manifestation under that natural pecking order. Copper toxicosis for plants is Verwoerd extraordinary contrasted with its lack same time done animals and mamoncillo toxicosis may be as a rule prompted by natural focuses over hereditarily abnormal unique. Principally copper may be accessible in the liver, shellfish, dried fruit, drain Furthermore drain products, sunflower seeds, oysters, sesame seeds, tahini, Furthermore sun dried tomatoes. The Normal substance about metal in the plant typically ranges from 4 will 20 mg from claiming copper for every kg from claiming dry weight. The Normal grown-up mankind's about 70 kg weight holds around 100 mg. The Everyday prerequisite may be over 2-5 mg for which half will be consumed from the gastrointestinal tract (GIT). Rest may be excreted through bile and kidney. Copper aggregates in the liver, cerebrum Also kidney more than rest for figure.

In human blood, copper is principally distributed between the erythrocytes and in the plasma. In erythrocytes, 60% of copper occurs as the copper-zinc metalloenzyme superoxide dismutase, the remaining 40% is loosely bound to other proteins and amino acids. Total erythrocytes copper in normal human is around 0.9-1.0 pg/ml of packed red cells. Copper has a selected biochemical function in hemoglobin (Hb) synthesis, connective tissue metabolism, and bone development. Synthesis of tryptophan is done in the presence of Cu. Besides these Cu as ceruloplasmin aid in the transport of iron to cells.

1.4. Diseases

An insufficiency about cu in diet for prolonged time particularly Throughout phases about dynamic Growth prompts anemia, development retardation, faulty keratinization Furthermore pigmentation about hair, hypothermia, mental retardation, progressions for skeletal system, Furthermore degenerative transforms Previously, aortic elastin. Unreasonable cu possibly alternately a result they need aid dangerous the lack when prolonged will a chance to be deadly mishap. At iron is expanded over physique acutely, nausea, vomiting, looseness of the bowels happens alongside hepatic harm. Same time incessant alternately prolonged aggregation about iron over body happens there may be a hepatic failure, diabetes, testicular atrophy, arthritis, cardiomyopathy, fringe neuropathy, Furthermore hyperpigmentation. Bronze diabetes is a triad about hemochromatosis, diabetes, Also cirque. Leukoplakia, there may be An critical diminish over hb Furthermore serum iron, while in oral sub mucous fibrosis those downright iron tying ability demonstrated statistically huge transforms. Recently, it need been discovered that iron might assume a part over esophageal carcinogenesis.

1) Zinc (Zn)

That metal zinc will be an ionized whichever to acidic or basic types. Content about zinc may be 2-3 ng the Normal body content about zinc will be 2-3 g in a normal grown-up. Something like 99% may be intracellular same time whatever remains may be previously, plasma. The Normal Every day prerequisite may be 15-20 mg/day. Phytase declines fibers, phosphates, calcium, and copper competes for zinc to absorption from small digestive system. Something like 2-5 mg/day is excreted by means of pancreas Also digestive system. The opposite mode for discharge is by means of proximal tubule what more sweat organs is. Plasma zinc levels would diminish done pregnancy, liquid loss, oral preventative usage, blood loss, intense myocardial infarction, infections, and Furthermore malignancies. The work of zinc previously, units also tissues is reliant on metalloproteinase What's more these proteins need aid connected with reproductive, neurological, immune, dermatological systems, and GIT. It may be fundamental for typical spermatogenesis Also maturation, genomic integument about sperm, for typical organogenesis, best possible working for neurotransmitters, best possible improvement about thymus, correct epithelialization clinched alongside wound healing, taste sensation, Also emission from claiming pancreas What's more gastric proteins. They might be biochemically ordered Concerning illustration the individuals included On nucleic corrosive and protein amalgamation Furthermore degradation, liquor metabolism, carbohydrate, lipid, What's more protein digestion system. They incorporate transferees, hydrases, lyses, isomerizes oxidoreductases, What's more interpretation factors. The catalyst practically crucial to zinc are basic phosphates, liquor dehydrogenase, carboanhydrase, glutamate Furthermore lactase dehydrogenase, what's more rna polymerases. The insufficiency side effects incorporate compromised vitality metabolism, liquor intoxication, acidosis, blockage of protein biosynthesis, transmutation response blocked Mobile decimation toward superoxide radicals. Zinc assumes a paramount part On Mobile proliferation, separation and metabolic action of the Mobile.

2) Chromium (Cr)

That aggregate substance for chromium may be something like 0. 006 g for a normal human grown-up. Those every day prerequisite is something like 0. 005 mg/day. That requirement of chromium may be to biosynthesis for glucose tolerance variable. Those insufficiency reasons hindrance of glucose tolerance same time poisonous quality brings about renal failure, dermatitis, and pulmonary cancellous. Transformed meats, entirety grain products, pulses, What's more spices would those best wellsprings from claiming chromium, same time dairy items What's more A large portion products of the soil hold numerous best little sums. Chromium content done creature foodstuff for example, such that meat, poultry, and fish will be low which gives 2 μg cr. Mossy cup oak dairy results need aid Additionally low Previously, cr What's more give <0. 6 μg/serving. Entirety wheat and wheat flour hold 5-10 μg about Cr/kg. Pulses, seeds, Also dim chocolate might hold numerous All the more chromium over mossy cup oak other sustenance's. Specific spices for example, dark pepper hold numerous secondary focuses from claiming chromium. Chromium will be excreted principally in the pee and previously, little amounts in the hair, sweat, Furthermore bile. Lung malignancy need been secured as an outcome of hexavalent chromium introduction clinched alongside smokers Furthermore nonsmokers and A percentage growths about different tissues for example, such that GIT Furthermore focal sensory system. The vast majority later information uncovers that incitement from claiming skin tumors for mice

Eventually Tom's perusing constant drinking-water purposes of presentation.

Hexavalent chromium on mix for sun based ultraviolet light. Chromium insufficiency is troublesome on report due to the exceptionally low levels available to blood; same time tissue levels are 10 times higher. If focuses about chromium need aid easier over those ordinary esteem about 0. 14-0. 15 ng/ml for serum or 0. 26 alternately 0. 28 ng/ml to plasma it demonstrates the vicinity of a extreme chromium lack. Brought up plasma levels camwood exist together for a negative harmony. Hyperglycemia might a chance to be connected with brought up plasma chromium What's more expanded urinary excretion, without reflecting tissue level. Chromium focuses On urine, hair, Also other tissues alternately muscle to liquids have likewise been accounted for not should reflect chromium status. The part of chromium supplementation might have been investigated previously, exceptional subgroups of patients with diabetes. Longstanding presentation with chromium will cause Ceaseless ulcers of the skin Also intense irritative dermatitis need been reliably accounted for previously, laborers presented on chromium holding materials. Inward breath about chromium mixes reasons denoted aggravation of the respiratory tract. Rhinitis, bronchospasm, and pneumonia. Chromium is recognized on make a standout amongst those danger component to oral squamous cell carcinoma.

3) Cobal

The average human adult contain about 1.1 g with the daily requirement of 0.0001 mg/day. It is a component of Vitamin B12. It induces erythropoietin and blocks iodine uptake by the thyroid. It has a role to play in methionine metabolism where it controls the transfer of enzymes like homocysteine methyltransferase. Deficiency produces cardiomyopathy, congestive cardiac failure, pericardial effusion, polycythemia, and thyroid enlargement. The occurrence of cobalt in animal tissues was demonstrated by Bertrand and Macheboeuf in 1925 and a wide distribution was confirmed by other workers employing spectrographic methods. Cobalt may be typically discovered in the earth consolidated for different components for example, such that oxygen, sulfur, Also arsenic. Little sums of these compound mixes could a chance to be discovered in rocks, soil, plants, and animals. Practically of the processing about cobalt includes the metallic type utilized within those framing for cobalt super alloys. The haul "hard metal" alludes all the will exacerbates holding tungsten carbide (80- 95%) joined with matrices framed from cobalt (5-20%) Also nickel (0-5%). To the general population, those diet will be those fundamental sourball from claiming presentation will cobalt. Meat, liver, kidney, clams, oysters, What's more milk every one hold numerous A percentage cobalt. Sea fish What's more ocean vegetables bring cobalt, Anyway territory vegetables need Verwoerd little; some cobalt will be accessible to legumes, spinach, cabbage, lettuce, beet greens, What's more figs. The proposed every day admission complex for Vitamin B12 to a mature person in the usa might have been said should be 3 µg, comparing on 0. 012 µg from claiming cobalt cobalt exacerbates need aid Consumed by the oral and inward breath routes Furthermore through the skin. Those levels from claiming gastrointestinal absorption rely on the dose; altogether little doses in the request of a couple µg/kg are Consumed Practically completely, inasmuch as bigger doses would great Consumed. Cobalt will be not effortlessly consumed from the digestive tract. Those body levels about cobalt regularly measures 80-300 mcg.

It will be saved in the RBCs and the plasma, and in addition in the liver, kidney, spleen, Furthermore pancreas. Cobalt need both valuable What's more unsafe impacts for human wellbeing. Cobalt may be useful to people On account it may be and only Vitamin B12, which will be fundamental with support mankind's wellbeing. Cobalt (0. 16-1. 0 mg cobalt/kg for physique weight) need additionally been utilized concerning illustration a medicine for anemia, including for pregnant ladies on account of it makes erythropoiesis. Cobalt also expands rbc generation done sound people, in any case best at high introduction levels. Lack of cobalt also prompts fatigue, digestive disorders, and What's more neuromuscular issues. Concerning illustration cobalt's insufficiency prompts diminished accessibility about B12, there is an expansion about large portions manifestations Also issues identified with B12 deficiency, especially pernambuco wood anemia, What's more nerve harm. Cobalt will be excreted on both the pee and the fect, free of the course from claiming presentation (inhalation, infusion or ingestion) The majority cobalt will make wiped out quickly. In one companion contemplate for people with hip prosthesis, there might have been a noteworthy expands in the occurrence about lymphatic and hematopoietic malignancies, and noteworthy deficits of breast and colorectal disease.

4) Manganese (Mn)

Manganese content about nourishments varies extraordinarily. Peterson and skinner What's more Schroeder et al. Discovered the most noteworthy focuses clinched alongside nuts, grains, Also cereals; those least On dairy products, meat, poultry, fish, Also fish. Generally secondary focuses of manganese were discovered clinched alongside solvent ("instant") espresso What's more tea sack and represent 10% of the downright Every day admission complex. The downright particular figure content Normal human grown-up need over 15 mg for manganese, commonly seen previously, nucleic corrosive. Every day prerequisite is something like 2-5 mg/day. Manganese acts Likewise an activator about catalyst and similarly as a part from metalloenzymes. They bring a part should assume clinched alongside oxidative phosphorylation, greasy acids Furthermore cholesterol metabolism, mucopolysaccharide metabolism, and urea cycle. Manganese is found On the whole mammalian tissues for focuses extending starting with 0. 3 should 2. 9 µg manganese/g. Tissues rich over mitochondria Also pigments (e. G. , retina, dim skin) tend to bring helter skelter manganese focuses. Bone, liver, pancreas, What's more kidney normally need higher manganese focuses over different tissues. That biggest tissue store for manganese is in the bone. [53] Bone, liver, pancreas, and kidney regularly need higher manganese focuses over different tissues. That biggest tissue store of manganese will be in the bone to hydroxyapatite crystals for enamel, more than 49 components would found, a standout amongst them constantly manganese, basically in exact little rate. The focuses of manganese in veneer are 0. 08-20 ppm, equal 0. 08-20 mg/kg, and over dentine are starting with 0. 6 should 1000 ppm. Mn centralization will be higher in the external surface of veneer over clinched alongside enamel-dentin border, Also higher on changeless over to essential dentition. Exactly of the proteins which need aid introduce alongside magnesium need aid arginase, diamine oxidase, pyruvate carboxylate, phosphoglucomutase, succinate dehydrogenase, glutamine. Synthetase, superoxide dismutase. The insufficiency reason dying issue because of expanded prothrombin chance same time amassing through a long time reasons anorexia, apathy, cerebral pain impotence, leg cramps, discourse disturbance, encephalitis similar to syndrome Furthermore parkinsonian such as syndrome. Psychosis might additionally happen.

5) Selenium

The association the middle of selenium and oral malignancy need not yet been comprehended clearly, Be that there may be A percentage proof watched that there will be An association the middle of selenium and Keshan syndrome. Couple investigations need indicated that prolonged insufficiency from claiming selenium produces this syndrome's Characteristics Previously, animals for example, disappointment Growth for rats Furthermore muscle maladies clinched alongside sheep. A selenium receptive clinical syndrome for people is portrayed for a few obsessive states. On humans, they watched that the individuals who detract oral self-medication holding selenium make bulky difficulties. Low blood levels for selenium watched clinched alongside A percentage obsessive states for example, colonic, gastric What's more pancreatic carcinoma Also cirque. Expanded selenium admission complex might reason Keshan syndrome. Keshan infection might have been main portrayed for 1935 clinched alongside north china. Clinically Keshan illness demonstrated intense also constant scenes about cardiogenic shock, extended heart, congestive heart failure, also cardiovascular arrhythmias. The etiology from claim-

ing Keshan sickness will be at present perplexedly. There would various theory recommended toward distinctive investigations for example, such that viral infections, natural intoxication, mycotoxins, Also dietary insufficiency. That theory that relates for that lack for selenium will be the practically acknowledged theory.

6) Fluorine

Fluorine may be a lightest component over assembly VII of the occasional table, for nuclear number 9. Fluorine assumes a paramount part in the tough tissues of the physique for example, bone Also teeth. It aides previously, transforming denser bones Furthermore fluoride need been recommended concerning illustration An restorative agenize in the medicine of osteoporosis. It will be possibility that fluoride, in conjunction for calcium, fortifies osteoplastic movement. It gets coordinated circuit under the bone grid Likewise Fluor apatite which thus increments those hardness for bones. Fluorine need profound anti-enzyme properties Also keeps dental caries the expanded fluoride use Might make answerable for the ant cariogenic movement. Fluoride or fluorine lack may be a speculative disorder, which might foundation expanded dental caries also conceivably osteoporosis because of an absence of fluoride in the diet. Large amounts about dietary fluoride result in fluorosis (bone disease) and mottling of teethe. Large amounts from claiming fluoride reason dental lesions, periosteal hyperostosis, calcification about ligaments, furthermore faltering. Handicapping fluorosis previously, human is watched done persons uncovered will high admission complex (>20 mg/day) In An period from claiming a few quite some time.

Acute toxicity of fluoride is very rare and can occur due to a single ingestion of a large amount of fluoride and can be fatal. The amount of fluoride considered lethal when taken orally is 35-70 mg F/kg body weight. Symptoms of acute toxicity occur rapidly. There is a diffuse abdominal pain, diarrhea, vomiting, excess salivation, and thirst. Chronic toxicity is caused due to long- term ingestion of smaller amounts of fluoride in drinking- water. Excessive fluoride more than ppm in drinking water daily for many years can lead to skeletal and dental fluorosis. Severe cases are normally found only in warm climates where drinking-water contains very high levels of fluoride. Due to chronic toxicity, bone density slowly increases; the joints stiffen and become painful.

Dental fluorosis might make undoubtedly perceived yet the skeletal inclusion may be not clinically clear until the propelled phase Also punctual situations might be misdiagnosed Similarly as rheumatoid joint inflammation or osteoarthritis. Fluoride builds those solidness of the precious stone grid to bone, yet makes bone additional fragile. The downright amount from claiming fluoride ingested will be the single the greater part paramount calculate in figuring out that clinical span of skeletal fluorosis; the seriousness from claiming side effects correlates straightforwardly for those level Also span about purposes of presentation.

7) Iodine

Iodine will be a crucial micronutrient needed in the least phases from claiming life; fetal existence what's more early youth continuously the majority discriminating stages for prerequisite. Iodine may be a vital constituent of the thyroid hormones thyroxine (T4 tetraiodothyronine) what's more (T3 triiodothyronine). It additionally assumes a paramount part in the working of the parathyroid organs. Iodine likewise pushes all development Furthermore improvement inside the physique and also aiding in digestion system. Due to its part in the metabolism, the indications of an iodine insufficiency could make sweeping. Despite the fact that it will be with the goal imperative with best possible working of the human organism, iodine lack will be not exceptional. Extreme iodine lack often happens previously, people who need thyroid sickness also are hyperthyroid alternately the individuals who need a goiter starting with thyroid glitch. Indications of iodine lack might incorporate amazing fatigue, abating for both physical Furthermore mental courses weight gain, facial puffiness, constipation, What's more torpidly. Babies conceived should iodine inadequate moms might be lethality Also was troublesome on encourage. If they would exited untreated, it will be probable that they will create cretinism Also wind up suffice poor general development and mental impediment.

Iodine over-burden may be lesquerella normal compared with its deficiency In spite of it is unfavorable, and in addition an absence of it. The writing gives data demonstrating that admission complex for iodine starting with seaweeds is safe in light of iodine may be organically bound What's more is not cumulated in the figure. Assuming that its admission complex is exceeded, it may be excreted with urine, primarily throughout that 1 st day. Organically bound iodine is harmless, considerably with prolonged utilize at helter skelter doses. To example, toward admission complex from claiming 1-5 mg for iodine with seaweeds by solid people, the sum iodine may be excreted with pee inside 48 h. Main high doses of natural iodine from seaweeds might reason unfavorable impacts on the work of the thyroid organ. Overabundance iodine camwood reason likewise thyrotoxicosis in this way concerning illustration hyperthyroidism and also constant thyroiditis, hashimoto's thyroiditis furthermore actually might increment the hazard of thyroid organ disease.

2. Techniques to detect trace elements

Recently trace elements content of food and tissues has been created interest among research scholars. Such determinations required sensitivity and accurate methods of analysis. Most of the trace elements are estimated with a help of colorimetric and spectrographic methods of analysis.

Atomic absorption spectrometry-based on flames arcs and sparks (flame by electro thermal)

Emission spectroscopic methods.

a) Neutron activation analysis.
b) Electrochemical methods.
c) Isotope dilution mass spectrometry.
d) Atomic X-ray fluorescence spectroscopy.
e) For a single elements analysis, atomic spectroscopy and electrochemical methods are frequently applied. For multi elements tech, NAA and spectroscopic methods are used.

Problems in detecting tracing elements

The problem of analytical inaccuracy and sample contamination is the source of error in trace element studies. Accuracy in the analysis can be overcome by using properly graded instruments, avoiding operator bias, ambient temperature, and pressure. Sample contamination may occur at the collection device or storage devices or air or chemical reagents or lab instruments. The method should also include standard reference materials to avoid errors, in both sample storage and analysis.

3. Conclusion

Human beings are living with the food. This food is the combination of elements to the body. The body contains lot of the elements. When the level of the chemical or compound or minerals are reduced or increased there is a chance of diseases. So this device will check the chemicals, mineral and other elements in the body and helps the people to take the medicine or advice then proper food to take to gain health. With this regular checkup the man can live long happily. With the artificial intelligence and the database stored for different kind of diseases this kit ask for the symptoms from the patients and analyses, diagnose the disease and provide the instruction, medicines to take regularly . If this device is devised then no need of doctor and the people need not to pay for the doctor often. Moreover they can live happily without any diseases.

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