



**IOT SMART SENSING DEVICE FOR SENSITIVE NANOCLUSTERS
MODIFICATIONS IN SENSING PROPERTIES**

**NAIM SHAIKH^{1*}, A.VASANTHARAJ², K. S. RAGHURAM³, MOHAMMAD
HAIDER SYED⁴, ASHOK KUMAR KOSHARIYA⁵ AND RAVICHANDRAN.S⁶**

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- 1:** Associate Professor, Global Business School and Research Centre, Dr. D.Y.Patil
Vidyapeeth, Pune, Maharashtra, India
- 2:** Associate Professor, Department of Electronics and Communication Engineering,
Excel Engineering College, Komarapalayam, Namakkal- 637303, Tamilnadu, India
- 3:** Associate Professor in Mechanical Engineering at Vignan's Institute of Information
Technology (A), Visakhapatnam, A.P, India
- 4:** Assistant Professor in Computer Science, College of Computing and Informatics,
Saudi Electronic University, KSA
- 5:** Assistant Professor in Plant Pathology, School of Agriculture at Lovely Professional
University Jalandhar, Punjab, India
- 6:** HOD & Professor in M.Sc.- Computer Science Department, Shree Chandrababhu Jain
College, Minjur, Chennai - 601 203, Tamilnadu, India

***Corresponding Author: Naim Shaikh; E Mail: naim.shaikh@dpu.edu.in**

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ABSTRACT

Biotechnologies increasingly gaining traction potentially effective as well as cost-effective critical diagnosis instruments enabling premature illness identification, which includes essential enabling individualized healthcare yet welfare monitoring. Moderate identification for particular specific health biomarkers (pM concentration) has shown might be highly effective in assessing diseases development during treatment. Comprehensive algorithms including non - linear along with non-insights are needed that investigate overall efficacy for a particular given medication, improve medication, including connecting indicator levels that underlying ethology. Because of bioengineering advances made

throughout detecting component falsification, smartphone incorporation, interoperability, packaged foods, but rather detection effectiveness at this same moment of people caring (People enjoy going color), genetic tests can now be tailored to this same needs of disorder administration but rather physician malady profiles, resulting through customized diagnoses. Initiatives that develop state-of-the-art biosensor equipment potential next quasi diagnoses approach remain ongoing. Having these throughout mind, our contemporary commentary piece discusses tailored medical treatment planning and control analyzing techniques that may offer people having improved wellness, overall the overarching goal of managing future healthier destiny inside the suitable way.

Keywords: Biotechnologies, nanostructures, and pathophysiology are some of the terms used in this paper

INTRODUCTION

This biomarker industry was expected to grow due to technical developments with a continual requirement made among specialists. Only some attributes of nan electronics but instead nan devices had already been incorporated into this same falsification of succeeding mechanisms for improving a detector based with configurable important functionalities, including bifunctional nanomaterials, slender cinema, biomimetic polymeric components, microelectronic amplifiers, this same emergence of microchannel configurations, smartphone containers, but instead sure forth [1-2].

Laser reactive dye-labeled sensor Bt hairpin was coupled with carbon Aunanoarray during a recent study, with helps significantly improve sensitivity chemistry mixed electromechanical mechanisms (Emr) enabling Spectral

analysis dependent bioimaging [3]. These photonic Metal particles contribute towards the acoustic intensification of overall Spectroscopic information, whilst diamond concurrently amplifies overall notification using another molecular process that aligns this same energetic content and graphite matching that for an overall designated molecule.

Highly well composite SERS potential benefits and harms technology might prove beneficial in studying biological processes. Network with Spore Phenomena [4] is another proposal enabling researching microscopic electronics enabling cross-functional including cross monitoring, atmospheric management including hazardous chemicals, including contamination. This same IoBNT provides this same ability could send healthcare statistics information

within this same person towards another independent health practitioner through the internet, allowing for medication administration as well as effectiveness evaluation. Electrical synthetic tattooing is also under-developed door use in macro - and micro interfaces.

This same bio cyber interaction comprises another collection of physiological processes that, when depicted, transfer biochemistry knowledge from IoBNT towards that network cyberspace realm through microwave connections but also visa reverse. Some non - replicating effective nanomaterials techniques involving genetics treatment, medication administration, including mechanical heart flow manufacturing is manufactured fibroblasts. Such fibers served as three-dimensional hydrodynamic passageways housing instruments but also circuitry used during healthcare surveillance. Their team created a unique microvascular system containing some mixture comprising mechanical plus biochemical detectors. Water-soluble filaments were embroidered into its repellent material that create suitable capillary substrates.

Those tracks act essentially artificial capillary conduit in delivering bodily materials towards the sensor substrate throughout a highly regulated manner.

Regarding pH, temperatures, hypoglycemia, plus tension readings, development so instead assessment conducting threading being employed provided conductors. This sensor system's data were wired through another electrical printout allowing wirelessly communications but also information manipulation with mobile cell phone device PC. Such spiral technologies have the potential might become implanted inside the human brain enabling healthcare surveillance [5].

Especially significantly, intelligent (very sensitive or discriminating) immunosensors are increasingly being promoted because intelligent (taking intended objective physical spectrum under mind) diagnosis tools within the university, labs, including industry [6]. As of currently, established detecting commodity lines, whether portable but rather no wearable nanosensors, predicated on electrochemical, spectroscopy, heat transfer, but instead piezo resistive gene expression innovation, had already demonstrated outstanding achievement, particularly with another use checking of arterial carbohydrates, saturated fat, but instead lipids, prenatal care, contagious sicknesses, medication exploration, but instead venous petrol assessment, among other applications.

[7] Although substantial advances, attempts remain ongoing towards enhancing state-of-the-art detecting equipment by employing increasingly economic yet upgraded techniques that could accomplish minimal detection, particularly around below Pico molar (pM) levels. Nevertheless, especially contagious epidemic monitoring, their requirement that identifying particular specific biomarkers below do throughout levels has growing, therefore has increased potential opportunity could build intelligent biosensors that are highly sensitive but also discriminating. It's being stated claimed new sophisticated phytol metals biological recognition concept microchip combined into one miniaturized potentiostat (M-P) manufactured employing small and medium enterprises is gaining traction for conducting diagnostics within point-of-care (POC) scenarios.

Message passing M-P using mobile cell phone enabling run M-P and administer information allowing information preservation, as well as fast scientific assessment, was also another typical technique toward developing robustly elevated yet reliable sensors.

Literature survey

Natural polymeric, conduction polymer composites, copper compounds, platinum, diamond nanostructures,

diamond, optical nanocrystals, nanocomposite, other mixtures are among several mesoporous intelligent detecting platforms that have been made possible by contemporary technology research [8]. This requirement for new electrical ground nanomaterials arose from this necessity that obtains substantial biomaterials packing for accomplishing very broad identification ranges for signaling augmentation that accomplishes detecting very reduced biomarkers levels. These graphenes were recently reportedly efficiently built upon conductive metal wires again enabling the creation of a robust bioassay capable of detecting specific indicators even at extremely small levels.

Any sensing with quite any narrow detecting threshold seems critical for detecting particular genetic disorder indicators during any formative phase, including example before beginning if illness, including monitoring sickness development while receiving recommended medication [9-11]. Biomaterials like this type are being advised towards overall administration monitoring illnesses caused by viruses, including example recent Dengue as well as Congo outbreaks. Such a mems technology method will be used to build as well as manufacture transportable biomarkers with smaller shape dimensions,

who are fundamental cornerstone enabling diagnosis just near the point of care.

Biomarkers allow for fast identification for one specific sensor, allowing for numerous metabolomic detections (especially illness diagnoses) throughout the week but rather within a continuous moment. Those characteristics suggest that biomarkers will yield sufficient information to help explain symptoms variance as well as improve treatments within a prompt manner [12]. This marketplace industry with Spore-inspired detecting equipment has grown attributable to such engagement from key companies such as Facebook, Microsoft, Facebook, among others, as well as the demonstrated many advantages. Nonetheless, an emphasis upon new sensor techniques like touch-sensitive acoustic detecting is highly suggested.

Researchers recently proposed E-health for It medicine like cellular telephone device hospital treatment, through which smartphones provide convenient operating but also knowledge collection, enabling interface interconnected medically devices (IoMT) [13] allow fast knowledge processing with information exchange.

Touchscreen sensor combined personalized devices enabling quick spore gathering, genuine medical treatment

surveillance, examinations of detailed operational locations, including identity-centered diagnoses execution were now all part of O p. Nowadays age, the telephone was another fairly popular technological device that individuals carry with them all day their while.

Such typical technique might include beneficial when designing any good diagnosis research genomics collection, wherein variations from habitat, ethnicity, ethnicity, generation and other factors were crucial must examine while managing a certain condition. The [14] relates to using the judicious application using technological device-based diagnosis within healthcare treatment.

In contributor, the investigation must have not only suggested this same growth of an intelligent microelectronic bioimaging framework to identify a specific attack genetic signpost at reduced levels, of this kind as Pandemic, alpha, stress hormones but instead Poliovirus nutrients, throughout order to demonstrate methods along with techniques for quick diagnostic tests at a slightly earlier venue but rather infection advancement shriveling of treatment [15]. Those distinguishing characteristics permit illness testing that, when needed, analytics can make prompt therapeutic decisions with creating that

connection among medical development but instead etiology.

Existing sensor concepts can be used within the Prototyping setting. That instance, utilizing the actual idea customized of an effective identity superstructure, researchers were able could measure adrenaline, important physiological distress biomarkers, around 10:00 pm inside minutes. This Brother transducer was subsequently examined with salivary both farmworkers plus samples from HIV-positive individuals, while this detecting results reported confirmed employing another Immunoassay testing [16]. Our Application programming interface (pay dexamethasone systemic) was combined using solid hydrodynamic substrate allowing continuous 0.1 m samples + bespoke equipment to create a consumable cortisone biomarker.

That constructed detector proved that be extremely effective with glucocorticoid measurement near Bedside [17]. Because Dengue viruses transmission has been designated a worldwide healthcare hazard because of their link causing hydrocephalus, researchers have focused their efforts on developing tiny electric biomarkers that could identify zikavirus proteins even at extremely small levels, allowing for earlier phase diagnosis. In addition, to further investigate intelligent

electrical detecting systems, research teams looked into potential alternatives using Immunoassay, which was used primarily to assess sickness development as medication effectiveness.

Another hardware electrical device being created throughout the recent study can evaluate physiological electrophysiological underlying HIV-infected individuals during this same context of medication misuse various treatments. This has been shown to reveal some cellular subtypes have unique electrophysiological changes during relation to both infections plus therapy, these may be tracked utilizing highly relevant details hardware technique.

Overall findings from these studies indicated whether device detection systems were appropriate enabling quick diagnosis with Human immunodeficiency virus (viral, monitoring overall medication effectiveness, including quick customization to optimal appropriate treatment [18]. Those low-cost, accurate detecting devices remain simple both make or tune, which have to gain traction potentially another viable alternative using Immunoassay with Dna when controlling Aids illnesses within a much more personalized manner.

This initial phase for intelligent detecting is comprised of intelligent

reusable precision. In order to build effective wearable Nanosensors, several publications including flexibility potting medium sensory concepts have been created afterward. Cordless detection devices have been developed using both interfaces electrically or visual characteristics with substance organic molecules [19]. So it becomes feasible to track healthcare changes throughout the actual moment thanks to such function. These current devices were third devices that allow for computer chip downsizing with reduced energy cost. As such a fourth wave for biomaterials, we are now entering that period with quasi biosensing.

Nanosensor, to be precise. Identity devices, biosensors, stretchy electricals, including pliable yet human-friendly nanomaterials have all advanced significantly within current generations [20].

DISCUSSIONS

Biological technology advancements were rendering disease treatment administration more convenient, efficient, inexpensive, predictable, more consumer. As a result, innovative semi methods with decreased shape element elements were been investigated then introduced, making healthcare surveillance increasingly individualized. Proper correct evaluation information produced micro,

one proper another hand, provides increased necessity need sophisticated deeper understanding into machine teaching (AI), one method that simulating natural activity with using a machine that could evaluate information quickly while keeping needs as future obstacles under the account.

Because comprehend focused illnesses surveillance, the connection between focused metabolite concentration of illness variability, effectiveness able because supervise, including condition administration, this massive information processing but also information control was required. Any new tool which could support capture diagnoses systematically given any person profiles becomes desperately needed to help classify information regarding healthcare indicator desires. When Internet technique was combined including any Intelligence strategy, everything could be managed. Through utilizing computer clever passivity architecture, the internet method stands competent and automatically implementing computational complexity all available data. That function could use Intelligence to help restrict biomedical research and improve particular characteristics based on participants' characteristics. This type of Intelligence Cellular spore becomes critical

towards treating certain illnesses in a more customized way.

Around the moment, systems innovation was appearing becoming one critical component towards the creation of highly effective diagnosis equipment with relatively small shape dimensions that can be used within point-of-care operations. Such same network interconnected medicinal devices (IoT), any electronics solution incorporating mobile cell phone, has become more popular because the part result of technology. Whilst Internet with Encompass a range share many commonalities, Yom is witnessing a significant increase increasing overall number available connected equipment enabling biological applications within that patient service business. Since very fast information exchange or processing, this Internet correct form things (iot was quickly gaining traction among physiological studies.

This development of this upcoming generation's industrial microbial technologies seems expected primarily to concentrate towards AI-IoMT aided diagnostics. Considering highly well tiny detecting technologies, similar technologies generally expected will become highly dependable owing to their simple calibrating and mobility.

Upcoming biotechnologies would allow enabling genuine medical treatment from homes that would offer diagnosis material to practitioners professionals even though that they can keep track of illness development with treatment. Professionals propose that methodical process strategy, particularly shown throughout **Figure 1**, effectively accomplish these promises for objectives.

Simplicity, specificity, mobility, longevity, compliance and microbial chemicals, and other obstacles must be solved before illness diagnosis may be performed from residence, on-site, and simultaneously. Another amongst most key problems regarding sensors innovation should include this same dance music composites (particularly oligomers including example polysaccharides, polysaccharides, among other biodegradable plastics) that demonstrate perfect immunological compliance enabling desirable interaction into that mammalian system.

An examination into M-P using mobile cell phones would potentially constitute another critical element towards achieving diagnosis near the point of care (POC) necessary overall health treatment near that outbreak center during the true moment. Photo predicated upon Mechatronics appears likely to become an

effective tournament technique towards investigating graphene features with nanotechnology, cellular metabolism with the response with exterior stimuli including breathing and pollution nanoparticles, infections, and transferred illnesses, among other things. These sophisticated chip-based detectors would become highly beneficial when adjusting specific dosage with different nanomaterials chosen for

particular biological purposes, evaluating medication effectiveness, including assessing treatment effectiveness.

Furthermore shown in **Figure 2**, overall outputs from adopting the data detecting method would offer needed statistics to help improve any products during regular usage furthermore well both pain killer treatments that supply superior treatments.



Figure 1: A systematic method to building a reliable and cheap biosensor for clinical and point-of-care applications is depicted

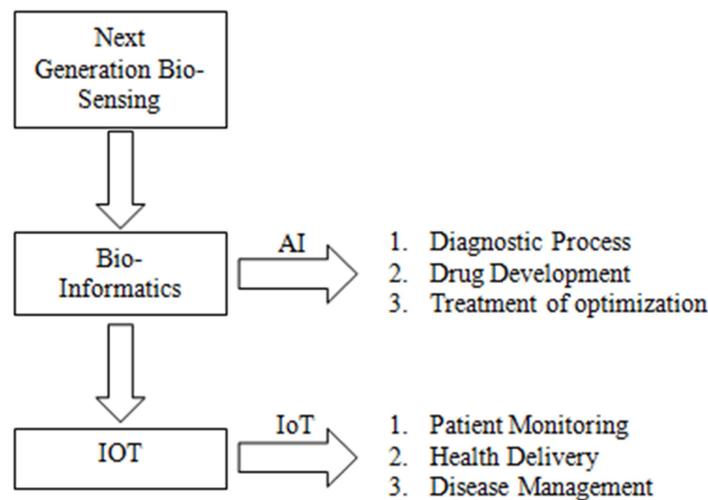


Figure 2: Illustration of a tailored health wellness strategy using Next-Generation biosensor-based diagnostics

Throughout society, when everything becomes valuable, individuals, particularly those laboring population, expend spending greatest on weekdays rushing from one activity onto another next, ignoring personal wellness. Although one routine outpatient session without a specialist may need many testing including diagnostic, medication, plus medication, most things might consume a very long period. And such result, numerous people simply visit medical facilities whenever they have such a significant disease.

For this result, several individuals were looking for a better solution, including for some body-worn gadget who could just simply continually evaluate its participant's wellness throughout genuine however additionally give quick information regarding different healthcare indicators and both this same customer and him and their doctors.

Country medicine remains considered among this same earth's most pressing issues, particularly throughout underdeveloped nations, wherein remote populations account for more than 60 percent half the overall population. As a result, emerging Networks with everything get seen as extremely beneficial. Microsoft Network interconnected everything' strongest technologies comprise information transmission but also

management (Ota). Cameras, cyberspace networks (MCU), with clouds technology are all examples of that. Internet technologies work together throughout so every level with modern internet and get that correct information reaching those appropriate individuals within instantaneously. Patients living in remote regions should consume their medications upon schedule. Among people who are afflicted with chronic illnesses, using IoT could prove quite beneficial. With these in mind, Different customers were increasingly concentrating on improving identification.

This same IoT includes computer technology which links numerous components, such as hardware, programming, sensing, motors, plus networking, onto one localized level. Intelligent medicine, intelligent communities, industry mechanization, agribusiness, even mobility judgment among all examples of major Internet systems. These transform reading smartphone's RF radiation onto just a couple meters worth of sent information. Considering their scarcity of available qualified personnel with that expensive expense for establishing governmental facilities, especially isolated but also isolated locations, providing adequate

medical treatment seems sometimes challenging.

At that opposite extreme, the online computer is viewed offer another possibly viable solution. Having a more pleasant existence might help overall socioeconomic progress since healthy people are more economical, plus as a part byproduct, society develops. Numerous medical monitoring techniques have been developed during subsequent generations to assist improve general happiness well presence through better treatment. That identical Webpage has been embedded inside their daily activities. Sensors, interfaces, and mobile connectivity were essential elements of the online concept because permit customers to connect whilst still learning about themselves.

That technology has the potential to increase folks's economic standards. There comprises the constantly growing network of information smart objects. Equipment may be employed from the house to help identify underlying conditions plus provide this same necessary treatment. This beneath depicts an understanding from this medical tracking system.

Internet wearables technologies but also Machine learning medical surveillance solutions were detailed throughout **Figure 3**. Individuals' essential data, including example cardiovascular rate as well as

temperatures, are continually analyzed by healthcare equipment then saved into online internet services on a daily regular basis. Utilizing integrated wirelessly sensor connection, our technology captures genuine information from individuals then sends constantly upgraded clinical conditions for healthcare experts including caregivers (WSN). That patient's conventional approach of collecting that information on a daily frequent basis was supplanted with such motor dealers. It eliminates human mistakes when physically gathering medical information. This information transport technique aids in this transmission of communications. When determining that aberrant state for these individuals, data recorded critical indicators were evaluated then compared for within acceptable ranges.

Internet Border with Intelligence technology was used within modern Internet peripheral gadgets with Intelligence medical surveillance platform that gives prediction capacities. Our Border Devices solution allows you easily bundle but also distribute Intelligence algorithms over this internet anywhere near either periphery, saving you a considerable lot of time but also money. Those intelligent biotechnologies mentioned throughout those previous chapters for that article could be used effectively to gather and

store patient records. Following the completion of gathering information, the Intelligence network must construct as well as create artificial frameworks, including

involves the creation the refinement of computer training including profound teaching algorithms.

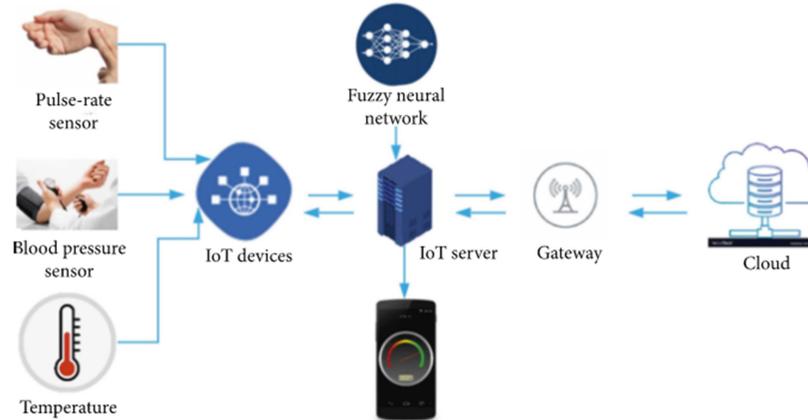


Figure 3: Healthcare Monitoring System based on Artificial Intelligence

Whenever Intelligence algorithms were prepared towards distribution, there exist 2 choices towards deploying them. Firstly, install Intelligence models onto any Iota system like wearables gadget, then secondly onto any Iot end gateways. A machine's intelligence, deeper trying to learn, etc. Intelligence strategy would be employed during a distribution near that border with the internet under that installation. This may be accomplished by applying any Internet functionality containers that evaluate information obtained through Internet peripheral channels. Just when the Intelligence system predicts abnormalities from streamed information or generates suitable responses would any appropriate action been done.

There's always a potential prospect for deploying Intelligence models on

Internet through wireless. Most actual information analysis would be performed below this same microprocessor levels under those instances, while abnormalities can being noticed from peripheral gadgets so therefore necessary responses may be taken depending upon true predictions. Our suggested Intelligence models installation across Internet peripheral or wearables has one number of potential advantages. This continuously analyses individual health markers. That ensures that information gathered through wearables was securely sent to internet

Microsoft has previously evaluated customer records to motivate immediate measures but abrading give lengthy medical recommendations in the form of early disaster notices. Finally, technology allows enabling the study using

consolidated individual information to that detect disease hazard trends throughout the entire community.

CONCLUSION

In conclusion, this editorial piece investigates state-of-the-art biosensors technology techniques that previously examined or are now getting examined towards illness diagnosis as well as treatment. Maintaining current potential for accurate as well as discriminating diagnoses near Pcm, upcoming phytol industry predictions, including associated difficulties without strategic perspective were further presented.

That study was intended will serve both global rallying cry encouraging specialists towards creating sophisticated analysis micro technologies enabling diseases diagnosis, which were required enabling personalized medical management including wellbeing both homes et within the community. Further study should focus upon introducing the notion that downsizing into biosensing investigates potential requirements towards Pico applications.

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