The role of Auto ZelK BRIDGE Hard wares, in Biomedical and Space Science Advanced Research and New Vaccine and Drug for cure Discovery and Development

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Abstract

Background
Modern biomedical, space science research and health care are provided by multidisciplinary teams in which biomedical engineers contribute to the advancement of knowledge equally as medical professions. Biomedical engineering represents one the most rapidly growing branches of industry in the developed world

Main Objective
To develop Hardware, identify and determine the effective potential in biomedical and space science researches

Methods
Methods to be use Formal, Informal, approaches, and various forms of Prototyping methods, are of interest in this work.

Result and Discussion
Having a cross-disciplinary approach, the project will have the potential to discover whole new soft wares, hard wares, and bioelectronics devices openings in the area of the biomedical and space science research. This research project enhances the prospects of the economy as a whole as it improves the capabilities and competitive advantage of the soft wares, hard wares, and bioelectronics devices development at university

Key Word:Soft wares, Hard wares, and Bioelectronics,Vaccine and Drug

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Background

Biomedical engineering (**BME**)is the application of engineering principles and design concepts to medicine and biology for healthcare purposes (e.g. diagnostic or therapeutic). This field seeks to close the gap between engineering and medicine, biomedical and space science researches combining the design and problem solving skills of engineering with medical and biological sciences to advance health care treatment, including diagnosis, monitoring, and therapy(1).

Medical device software,in the U.S., the FDA states that "any software that meets the legal definition of a [medical] device" is considered medical device software (2). A similar "software can be a medical device" interpretation was also made by the European Union in 2007 with an update to its European Medical Devices Directive, when "used specifically for diagnostic and/or therapeutic purposes (2)."

Medical software is any software item or system used within a medical context, such as (3),(4),(5),

- standalone software used for diagnostic or therapeutic purposes;
- software embedded in a medical device (often referred to as "medical device software");
- software that drives a medical device or determines how it is used;
- software that acts as an accessory to a medical device;
- software used in the design, production, and testing of a medical device; or

- software that provides quality control management of a medical device

The increasing Importance of Software in Medical devices

The increasing importance of Software in Medical deviceshas become such a vital part of modern healthcare that practically no diagnosis or treatment is possible without them. According to the WHO, there are about 1.5 million medical devices available today, ranging from low cost devices like the thermometer and stethoscope to expensive, highly sophisticated devices like MRI and chemotherapy machines. With the increasing complexity and connectivity of medical devices, the role of medical device software development is becoming more crucial.

Today's medical devices are also capable of communicating with each other wirelessly and over the internet to other devices and applications, magnifying the importance of software to process and display accurate information for various users.

In the early 1990s, NASA researchers began developing hardware that would let them study the cell tissues of mammals -- including humans -- in microgravity. They also needed it to protect the fragile cultures from the turbulence of Space Shuttle launch and landing. The resulting device enables the growth of tissue, cancer tumors and virus cultures outside the body, both in space and on Earth.

Using Rotary Cell Culture System (RCCS) technology, researchers could potentially test chemotherapy agents on a patient's own cancer cells from outside of the patient's body. There are similar possibilities for AIDS research: the RCCS can produce human HIV host cells that can be infected and studied.

Today, leading research facilities across the United States are employing the RCCS to study cancer, cystic fibrosis and infectious diseases such as the avian flu, Ebola virus and monkey pox. They're also using the RCCS to provide tissues for the development of HIV vaccines and other drugs.

What Does A Software Engineer In Biomedicine Do?

Engineering in biomedicine is a fast growing specialty and lucrative career path for engineers. Software engineers are important in many facets of biomedical engineering and science. Most medical devices require software to function. Developing and maintaining that software is an important job of the biomedical software engineer. Biomedical researchers look to software engineers to develop algorithms for data analysis and biological system modeling. Software engineers are important in the clinical setting, developing systems that aid the clinician in medical records, patient diagnosis, patient monitoring, and clinical decision making. software engineers are also very important in the biomedical researches (vaccine and drug discovery and development) and space science.

Even though technologies highly growing in the past 20 decades, recent studies demonstrate the growing of diseases transition and spread and mortality rate; The development of

biomedical compute technology and increasing availability of disease related spatial data have made different modeling approaches possible as they have the power to support modeling of large numbers of objects easily and examine disease spread through time and space (6),(7),(8),(9),(10). Technological advances and the desire to design realistic models have led to the emergence of more advanced mathematical, individual-based statistical and simulation models (11),(12),(13).

Bioinformatics

Software engineers are involved in the collection and analysis of biomedical information collected by clinicians and researchers. Software engineers play a vital role in the development and implementation of sophisticated data analysis algorithms. Software engineers also play an important role in developing models of biomedical processes. These models serve as research, teaching and diagnostic tools for the biomedical scientist and physician. Data analysis and modeling software can be used in the areas of gene mapping, public health research, and more.

In this article, I discuss the role of Auto ZelK BRIDGE Hard wares, in Biomedical and Space Science Advanced Research and New Vaccine and Drug for cure Discovery and Development

Conclusion

Lack of new advanced biomedical soft wares, hard wares and bio-electronic device, made the generation remain in the burden of most infectious and chronic diseases; which are un-cure, and un-prevented, more so, the mortality, and the diseases spread still growing.

To feel this gap knowledge's hard wares, development is crucial to advance the biomedical researches and space science researches.New novel technology; hard wares device development leading new therapeutic discovery and development. Even though several hard wares were develop, still need highly advanced hard wares to advance biomedical researches and space science researches and develop drugs and vaccine which are safe, effective and for cure.

Reference

1. Enderle JD, Bronzino JD. Introduction to biomedical engineering: Academic press; 2012.
2. Murray Jr J. CDRH Regulated Software: An Introduction. Mar-2010. 2010.
3. Becchetti C, Neri A. Medical instrument design and development: from requirements to market placements: John Wiley & Sons; 2013.
4. Vogel DA. Medical device software verification, validation and compliance: Artech House; 2010.
5. Hota C, Srimani PK. Distributed Computing and Internet Technology: 9th International Conference, ICDCIT 2013, Bhubaneswar, India, February 5-8, 2013, Proceedings: Springer; 2013.
6. Moore DA, Carpenter TE. Spatial analytical methods and geographic information systems: use in health research and epidemiology. Epidemiologic reviews. 1999;21(2):143-61.

7. Crouse JR, Raichlen JS, Riley WA, Evans GW, Palmer MK, O'Leary DH, et al. Effect of rosuvastatin on progression of carotid intima-media thickness in low-risk individuals with subclinical atherosclerosis: the METEOR Trial. Jama. 2007;297(12):1344-53.
8. Yang Z. PAML 4: phylogenetic analysis by maximum likelihood. Molecular biology and evolution. 2007;24(8):1586-91.
9. Bian L, Liebner D. A network model for dispersion of communicable diseases. Transactions in GIS. 2007;11(2):155-73.
10. Mermel LA, Machan JT, Parenteau S. Seasonality of MRSA infections. PLoS One. 2011;6(3):e17925.
11. Yozwiak NL, Skewes-Cox P, Stenglein MD, Balmaseda A, Harris E, DeRisi JL. Virus identification in unknown tropical febrile illness cases using deep sequencing. Plos neglected tropical diseases. 2012;6(2):e1485.
12. Croucher NJ. From small reads do mighty genomes grow. Nature Reviews Microbiology. 2009;7(9):621-2.
13. He M, Sebaihia M, Lawley TD, Stabler RA, Dawson LF, Martin MJ, et al. Evolutionary dynamics of Clostridium difficile over short and long time scales. Proceedings of the National Academy of Sciences. 2010;107(16):7527-32.