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Aims and Scope

Software Engineering has become very important with the ever-increasing demands of the software development to serve the millions of applications across various disciplines. For large software projects, innovative software development approaches are vital importance. In order to gain higher software standards and efficiency, software process adaptation must be derived from social behavior, planning, strategy, intelligent computing, etc., based on various factors. International journals of software engineering address the state of the art of all aspects of software engineering, highlighting the all tools and techniques for the software development process. The journals aims to facilitate and support research related to software engineering technology and the applications. International journals of software engineering welcomes the original research paper, review papers, experimental investigation , surveys and notes in all areas relating to software engineering and its applications. The following list of sample-topics its by no mean to be understood as restricting contributions to the topics mentioned:

Ø Aspect-oriented software development for secure software

Ø Dependable systems

Ø Experience related to secure software system

Ø Global security system

Ø Maintenance and evolution of security properties

Ø Metrics and measurement of security properties

Ø Process of building secure software

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Data Mining based Analysis Processes in Bioinformatics

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ABSTRACT

This research of data mining in bioinformatics is hampered by many facets of biological databases, including their size, number, diversity and the lack of a standard ontology to aid the querying of them as well as the heterogeneous data of the quality and provenance information they contain. Bioinformatics are fast growing research area today. It is important to examine what are the important research issues in bioinformatics and develop new data mining methods for effective analysis.Bioinformatics is the science of storing, separating, sorting out, breaking down, deciphering and using information from biological arrangements and particles. It has been for the most part energized by advances in DNA sequencing and mapping systems. In recent decades quick developments in genomic and, other atomic research advancements and developments in information advances have consolidated to deliver a colossal amount of information identified with sub-atomic science. The essential objective of bioinformatics is to build the comprehension of biological processes

1. OVERVIEW

In recent year, quick developments in genomics and proteomics have produced a large amount of biological data. Reaching inferences from these data requires refined computational investigations. Bioinformatics, or computational science, is the interdisciplinary science of translating biological data utilizing information innovation and computer science. The significance of this new field of the request will develop as we proceed to create and coordinate large amounts of genomic, proteomic, and other data. A specific dynamic region of research in bioinformatics is the application and improvement of data mining procedures to fathom biological problems[1]. Examining large biological data sets requires comprehending the data by deducing structure or speculations from the data. Instances of this kind of investigation incorporate protein structure forecast, quality characterization, disease grouping dependent on microarray data, bunching of quality articulation data, factual displaying of protein-protein connection, and so forth. In this way, we see an extraordinary potential to build the collaboration between data mining and bioinformatics[2-5].

Bioinformaticians handle a lot of data: in TBs if not in gigs therefore it ends up significant not exclusively to store such huge data yet in addition seeming well and good out of them. In this article, I will discuss what data mining is and how bioinformatic can profit by it. Data Mining is the way toward finding another data/design/information/understandable models from huge measure of data that as of now exists. It is now and again likewise alluded to as "Knowledge Discovery in Databases" (KDD). It

has been effectively connected in bioinformatics which is data-rich and requires fundamental discoveries, for example, gene expression, protein demonstrating, and tranquilize discovery, etc. Advancement of novel data mining methods gives a helpful method to understand the rapidly extending biological data. Presently we should talk about fundamental ideas of data mining and afterward we will move to its application in bioinformatics. As characterized before, data mining is a procedure of programmed generation of information from existing data. The real objectives of data mining are "prediction" and "portrayal". The primary tasks which can be performed with it are as per the following:

- **Classification:** Classification is the learning of a function that maps / reads (classifies) the input data item into one of several predefined classes (i.e., existing data).

- **Estimation:** It shows a value for the data input.

- **Prediction:** Involves both classification and estimation, but the data is classified on the basis of the some future behavior or estimated future value.

- **Association rules:** It is also known as dependency modeling, where it determines the data associated with each other and what may be the outcomes.

- **Clustering:** Separating the population into subgroups or clusters.

- **Description & Visualization:** Representing the data with the help of visualization techniques / tools.

Characterization, Estimation and Prediction falls under the class of administered learning and the rest three tasks-Association principles, Clustering and Description and Visualization goes under the unsupervised learning. In the previous class, a few relationships are set up among every one of the factors and the examples are distinguished in the last classification. Data Mining has been demonstrated to be exceptionally compelling and valuable in bioinformatics, for example, microarray examination, gene discovering, space ID, protein work prediction, and malady recognizable proof, tranquilize discovery, etc. Ongoing literature incorporates a ton of instances of the application of data mining in these fields. Albeit numerous means needs yet to be made, today there is a pattern towards broadly gathering data from various sources in storehouses possibly valuable for resulting examination.

2 SCIENTIFIC DATA ANALYSIS IN BIO- AND MEDICAL INFORMATICS

Bioinformatics is conceptualizing science as far as macromolecules and applying information technology techniques from connected math, computer science and insights to understand and sort out the information related with these macromolecules. Regular research inquiries in bioinformatics are, e.g., discovering prescient or prognostic biomarkers, characterizing subtypes of infections, ordering tests by utilizing gene signals, comments, and so forth. So as to respond to such inquiries, bioinformaticians, analysts, surgeons and scientists join distinctive heterogeneous data sources from private or open storehouses, and they apply, or if necessary create and after that apply, diverse examination methods to the information removed from the vaults and decipher the outcomes until they have discovered great blends of data sources and investigation methods.

This procedure can be short or long, direct or complex, contingent upon the idea of the data and questions. This is the thing that we will call here a situation. In the accompanying, we will portray a portion of the data sources and storehouses, techniques and examination procedures and client bunches that are normally associated with bioinformatics situations.

3 TECHNIQUES AND USER GROUPS

Bioinformatics employs a wide scope of techniques from math, computer science and insights, including succession arrangement, database plan, data mining, prediction of protein structure and capacity, gene discovering, expression data clustering, which are connected to heterogeneous data sources. Bioinformatics is a shared order. Bioinformaticians of today are exceptionally qualified and concentrated individuals from different foundations, for example, data mining, arithmetic, measurements, science, IT advancement, and so forth and a common investigation situation includes numerous clients and specialists from various offices or associations. Bioinformaticians are regularly cooperating with various partners, in all respects schematically; these can be the accompanying:

- **IT people:** they might support bioinformaticians by providing and helping with the needed computational power, network infrastructure and data sharing.

- **Clinicians:** they are often a key point for patient's information access and for the design and planning of the clinical part of the experiment.

- **Pharmaceuticals Companies:** they might be interested in discoveries that have a commercial potential, typically at the end of the research project.

- **Statisticians:** they can provide help on designing the study and correctly analysing the data.

- **Biologists:** they can provide help on designing the experiment and correctly interpret the data. They can also be key people for managing the clinical samples.

4 CHALLENGES AND REQUIREMENTS

The present data analysis situations in bioinformatics face the accompanying challenges: Bioinformaticians of today are from different foundations, for example, datamining, arithmetic, measurements, science, IT improvement, and so forth. Hence, the situations include a heterogeneous and dispersed gathering of clients. Contingent upon their experience, knowledge and kind of occupation, clients can communicate with an analysis domain in an alternate manner and utilize various tools. For example, some bioinformatics individuals should need to design and run predefined work processes by means of straightforward structure-based web pages.

Different clients should need to plan new work processes based on existing parts or reuse work processes from associates or they should need to grow new segments by simply composing their analysis algorithms in their very own language of decision or use programming from partners and should need to incorporate them into the system by composing a module for the code to keep running inside nature.

5 BUILDING BLOCKS FOR THE DATA MINING ENVIRONMENT

We identified a set of building blocks that can serve as basis for the p-medicine data mining environment:

- **Reusing available components:** a method for the integration and reuse of data mining components that have been developed in a single computer environment into distributed environments.

- **Developing new components:** a method for interactive development of data mining components in distributed environments.

- **Reusing existing analysis processes:** a method for the integration and reuse of data mining-based analysis processes that involve several analysis steps.

- **GUI and system interfaces:** interfaces that address different levels of granularity for users to work with the system or to extend the system.

6 CURRENT DEVELOPMENTS IN MACHINE LEARNINGT E C H N I Q U E S I N BIOLOGICAL DATA MINING

This enhancement under Bioinformatics and Biology Insights intends to give researchers and researchers working in this rapid and advancing field with on the web, open-get to articles created by driving worldwide specialists in this field. Advances in the field of science have generated enormous chances to permit the usage of current computational and statistical techniques. Machine learning methods specifically, a subfield of computer science, have advanced as an essential instrument connected to a wide range of bioinformatics applications. Therefore, it is extensively used to research the underlying systems prompting a particular sickness, just as the biomarker discovery process. With growth in this particular area of science comes the need to access cutting-edge, high caliber insightful articles that will use the knowledge of researchers and researchers in the different applications of machine learning techniques in mining biological data.

7. BIOINFORMATICS APPLICATIONS

An ongoing research in the Science Policy Forum on expanding logical investigation with Artificial Intelligence (AI) examines that the human bottleneck in logical disclosures could be defeated through 'systems that utilization encoded knowledge of logical areas and processes to help experts with tasks that recently required human knowledge and thinking.' Techniques created by computer researchers have given a chance to researchers to succession around 3 billion base sets (bp) of the human genome. As of now, accomplishments generated from the application of next-generation DNA sequencing (NGS) advancements have introduced genomics science, and encouraged basic advancement in different areas, for example, the study of disease transmission, biotechnology, crime scene investigation, biomedical sciences, and transformative science.

Bioinformatics, as an interdisciplinary area, investigates new biological bits of knowledge from biological data. Biological databases are the core of bioinformatics and speak to a sorted-out arrangement of a tremendous assortment of biological data from past research led in labs (incorporating into vivo and in vitro), from bioinformatics (in silico) analysis and logical articles. Databases identified with 'omics' (for example, genomics, transcriptomics, proteomics, and metabolomics) gather trial data and can be perused with structured programming.

8. DATA MINING IN BIOINFORMATICS: PROBLEMS

We focus on the following biological problems in this survey: sequence analysis, gene expression data analysis and genetic analysis, systems biology, biomedical applications.

Biological sequence analysis

Biological arrangement analysis means to allow useful explanations to successions of DNA sections and is significant in our understanding of a genome. One precedent is the recognizable proof of join locales as far as the exon and intron limits, a complex task because of the number of elective grafting conceivable. Different models incorporate the prediction of administrative locales that permit the official of proteins and decide their capacities; the prediction of translation begins and inception destinations, and the prediction of coding districts.

- **Gene Expression Analysis and Genetic Analysis**

Gene expression analysis and genetic analysis through microarrays or gene chips is a significant task for the understanding of proteins and mRNAs. A microarray test estimates the relative mRNA levels of genes, which enables us to analyze the gene expression levels of some biological examples after some time to understand the contrasts between typical cells and cancer cells. One characteristic of this analysis is that the number of highlights that compare to genes is normally more than the number of tests. This makes it hard to apply customary component selection approaches straightforwardly to this data to diminish its dimensionality.

- **Biomedical application**

Biomedical applications investigated in this study incorporate biological content mining, biomedical picture characterization, and omnipresent healthcare. Biological content mining alludes to the task of utilizing information retrieval techniques to remove information on genes, proteins, and their useful relationships from logical literature. Today we face a tremendous measure of biological information and discoveries that are distributed as articles, diaries, online journals, books, and gathering procedures. PubMed and MEDLINE give probably the most cutting-edge information for biological researchers.

9. CONCLUSION

Recent progress in molecular biology and genomics has led to a huge growth of digital biological information. Bioinformatics studies currently require processing of huge amounts of data with heavy computation. Hadoop is a versatile framework that can easily handle both approaches with high efficiency. Bioinformatics text mining and data mining are developing as interdisciplinary science. Text mining and Data mining approaches seem ideally suited for bioinformatics, since bioinformatics is data-rich but lacks a comprehensive theory of life's organization at the molecular level. However, text mining and data mining in bioinformatics is hampered by many facets of biological databases, including their size, number, diversity and the lack of a standard ontology to aid the querying of them as well as the heterogeneous data of the quality and provenance information they contain.

Another problem is the range of levels the domains of expertise present amongst potential users, so it can be difficult for the database curators to provide access mechanism appropriate to all. The integration of biological databases is also a problem. Challenges in text mining data mining and bioinformatics are fast growing research area today. From the perspective of information science technology, the study of bioinformatics is a process from "data" to "discovery".

Data mining technology based on machine learning is playing an increasingly important role in the study of bioinformatics. As dealing with the massive biological data has become the significant work of bioinformatics. Through integrating multi-level data from the biological experiment and effectively application of suitable data mining methods, thus the regulation mechanism of typical disease can be studied in the angle of the whole system. Which is of great significance for life science?

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Impact of Big Data on Customer Behaviour in Terms of their Expectations & Preferences

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ABSTRACT

The ascent of 'Big Data' vastly affected marketing examination and practice. In this article, we first feature sources of valuable consumer information that are presently accessible everywhere scale and next to no or no cost. We along these lines examine how this information – with the assistance of new systematic methods – can be converted into important bits of knowledge on consumers' mental states and characteristics that can, thus, be utilized to illuminate marketing methodology. At last, we talk about circumstances and difficulties identified with the utilization of Big Data as a window into consumers' brain science, and give suggestions to how to execute related innovations in a way that advantages the two organizations and consumers.

1. INTRODUCTION

The accessibility of data everywhere volume, assortment, speed and veracity, often named as 'Big Data', bigly affected marketing exploration and practice. The abundance of individual information accessible about consumers online makes it conceivable to understand and oblige the individual needs of consumers like nothing anyone's ever seen some time recently. Regardless of whether it is their Spotify playlists, Facebook profile, Google search inquiries, or portable area, the advanced impressions consumers leave with each progression they take in the computerized condition make broad records of their own propensities and inclinations. By taking advantage of this rich pool of consumer data, organizations can improve consumers' involvement by better coordinating the marketing offering to consumers' inclinations and do as such at the suitable minute. Utilizations of Big Data in marketing have to a great extent concentrated on (a) surveying customers' inclinations (b) foreseeing what customers are well on the way to purchase next (c) enhancing focused on promoting (d) understanding brand recognitions and (e) depicting the aggressive landscape. See Wedel and Kannan for a survey. In any case, examinations of how Big Data can help advise a portion of the more mental parts of consumer behavior that is gone for understanding – instead of only anticipating – consumer dispositions and emotions have up to this point just got insufficient consideration. Davenport et al. take note of that holding tremendous measures of customer data may help organizations to 'find out about their customers' however does not really enable them to 'know the customers themselves' [1]. The concentration of this paper is to feature the current work and talk about the capability of utilizing Big Data as a way to better understand consumers' steady mental characteristics and in addition more pliant mental states.

2. RECENT SOURCESFOR CONSUMER INFORMATION

Conventional approaches to social occasion 'human-driven' consumer information incorporate broad customer reviews, center gatherings, interviews, perception studies and constrained extension optional data, for example, scanner board data. For instance, as a major aspect of the Nordstrom's Personal Touch program, individual customers recorded itemized information on customers different preferences, their way of life and tastes through phone and up close and personal discussions and in addition perceptions made in the store. While the plot approaches can produce significant customer knowledge, they are not just costly and tedious – and in this way hard proportional – yet in addition inclined to various settled reaction predispositions. For instance, even the most spurred customer will think that its hard to precisely review the buys they made in the course of recent weeks or the correct inclination they encountered when acquiring a particular item [2].

On account of mechanical advances in the accumulation, stockpiling and analysis of a lot of data, organizations would now be able to increase legitimate bits of knowledge on a great many consumers by taking a gander at the computerized records that are inactively gathered as consumers approach their everyday lives.

Truth be told, watching the behavior of a consumer in a customary retail location is fundamentally the same as dissecting the trip of a customer who is perusing an organization's online store (e.g., one can inspect the qualities of items the client has taken a gander at and/or purchased, measure the time they took to settle on a choice, or execute mouse-following advancements to contemplate the choice procedure). So also, customer discussions, item audits and posts in social media make it conceivable to watch substantial and characteristic 'center gatherings' at next to no to no cost.

The sources of information organizations can take advantage of to take in more about their consumers are relatively boundless, and it would go past the extent of this paper to talk about every one of them in detail. Among the most imperative ones are chronicled acquiring data, Visa records, search inquiries, perusing histories, blog entries, social media profiles, and Smartphone sensor data (e.g., GPS area). Essentially, it is often conceivable to join the information separated from various sources to frame a more all encompassing photo of a consumer's day by day propensities and inclinations [3]. By coordinating information acquired from a consumer's social media profile, their telephone logs and sensor data and in addition their charge card spending, for instance, one can get a genuinely precise picture of what a consumer has done when and with whom.

These new sources of data originate from different sources, as well as come in various organizations. While customary data have been basically organized in a numeric configuration, social media data, are essentially unstructured including, content, pictures, sound and video. Accordingly, extraordinary expository approaches are expected to change over such data into knowledge and bits of knowledge.

3. CONVERTING BIG DATA INTO HUMAN-CENTRIC CUSTOMER KNOWLEDGE

The assignment of turning tremendous measures of – often unstructured – data into astute consumer knowledge isn't simple and often requires the utilization of logical systems that are outside of the standard methodological tool kit of consumer behavior researchers. In any case, late years have seen the ascent of alleged computational social science research; a train went for applying approaches from the PC sciences to questions asked by social researchers. While the scope of conceivable uses of such procedures to social science questions is limited just by the inventiveness and creative energy of the researcher, here we concentrate on two sorts of experiences that have as of late pulled in a lot of consideration among researchers and specialists alike: the expectation of (1) moderately stable mental qualities that assistance disclose consumers' general inclination to think, feel and carry on positively, and (2) pliant mental states that express consumers' attitudes and emotions in the-minute and help to put their behavior in setting.

Foreseeing consumers' mental characteristics

The examination of stable mental characteristics, for example, identity, administrative concentrations, or requirement for cognizance, has a long- standing convention in consumer behavior research. A standout amongst the most reliable discoveries proposes that consumers indicate more positive subjective, passionate and behavioral reactions to items, brands or marketing messages that match their own particular mental characteristics [4]. For instance, an outgoing and receptive consumer may encounter more positive emotions and report a higher aim towards a retail brand that works in conspicuous and strange garments, or that utilizations outgoing and inventive dialect to publicize their items (e.g., 'Stand out from the crowd and feel one of a kind with our most recent spring accumulation'). Organizations have since a long time ago utilized such bits of knowledge for branding and publicizing purposes. Be that as it may, in light of the fact that dissimilar to demographics and past buys, inert mental qualities can't be watched straightforwardly, the chances to target consumers and customize promoting in light of mental characteristics have been constrained. On the off chance that a cell phone supplier, for example, chose to make a solid outgoing brand, it was exceptionally hard to concentrate its promoting endeavors on outgoing consumers shy of picking media channels (e.g., TV appears) that are anticipated in view of surveys or administrative judgment to have a bigger extent of social butterflies. Rather, the branded marketing message had been principally centered on mass marketing, broadcasting to huge and heterogeneous gatherings of people, in this way constraining its adequacy.

In the time of Big Data, be that as it may, mental qualities – including identity, IQ and political introduction – can be precisely anticipated from consumers' advanced impressions. Researchers have exhibited the capacity to precisely derive individual attributes from (an) individual sites, (b) Facebook or Twitter profiles, (c) online journals, and (d) dialect utilize. This advanced type of psychometric appraisal guarantees to be a distinct advantage in the application and experimental assessment of psychographic marketing. In an early spearheading investigation, for instance, Hauser and partners derived subjective styles (e.g., expository versus passionate) from clickstream data and demonstrated that coordinating a site's 'look and feel' to consumers' predominant motivational introduction can expand sales by up to 20%. Likewise, Matz and partners demonstrated that deriving the identity of Facebook clients from their Likes and coordinating the substance of genuine publicizing efforts (items and marketing messages) to their prevailing identity qualities can essentially expand navigate and change rates. As the advanced evaluation of mental characteristics turns out to be more across the board and promptly accessible (e.g., LIWC for electronic content analysis; Apply Magic Sauce and Stat Social for identity forecasts), consumer behavior researchers will have the capacity to expand on this early research and test the adequacy of psychographic focusing in various spaces (e.g., retail, magnanimous giving, political crusading) and channels (e.g., social media, email, in-store), utilizing diverse mental attributes (e.g., identity, subjective style, motivational introductions), and distinctive result measures (e.g. clicks, buys, long haul maintenance).

Transforming customer data into significant mental profiles offers gigantic open doors for a more all encompassing Customer Relations Management that crosses over any barrier amongst on the web and offline channels [5]. For instance, realizing that a consumer takes after a psychological style that is explanatory instead of enthusiastic makes it workable for the two PCs on the web and salespeople in physical stores to adjust their communication to the inclinations of the customer.

Foreseeing consumers' mental states

As we have plot, mental traits assume a vital part in understanding and anticipating consumer behavior. Notwithstanding, marketing researchers have since quite a while ago perceived that they can't represent the full variety in consumer behavior. This is, on account of mental traits don't work in a vacuum, however rather are communicated in a specific setting, these traits are often affected by situational factors. For instance, consumers who are in a positive state of mind utilize more heuristic – as opposed to orderly – information preparing and assessitems and brands all the more positively. Thus marketers can profit by giving careful consideration to and gain by customers' mental states. Notwithstanding, as a result of the transient idea of mental states distinguishing such states continuously is considerably more difficult than recognizing mental traits. Like mental traits, mental states have customarily been fixing to

poll measures [e.g., the PANAS scale for positive and negative affect]. Be that as it may, these have been primarily performed for scholastic purposes as the capacity of firms to quantify and act progressively on changing mental states utilizing overviews is to a great extent unfeasible. Luckily, new data sources and advances of analytics systems make mental traits unsurprising from a wide assortment of computerized impressions gathered progressively [6]. Consumers' state of mind and emotions have been effectively anticipated from talked and composed dialect, video, wearable gadgets, Smartphone sensor data, and even information got from the earth, for example, climate or physical area. While marketers have since quite a while ago utilized review investigations of consumer feeling in the investigation of online informal, the capacity to survey consumers' mental states and estimation progressively furnishes consumer behavior researchers and professionals with gigantic chances to customize marketing substance to the immediate mental needs of consumers. Setting mindful proposal frameworks, for instance, can utilize information on consumers' mind-set or emotions to expand the importance of the substance that is recommended to the client. Such setting mindful recommenders, which consider consumers' emotions, have indicated enhanced suggestions for music, films, and pictures.

4. CONSOLIDATING MENTAL CHARACTERISTICS AND STATES

The mix of mental traits (fluctuation across consumers) and mental states (changeability inside consumers after some time) offers a remarkable understanding of consumers' interesting needs as they identify with the circumstance particular articulations of more steady inspirations and inclinations additionally contrast with the theory of free traits,]. For instance, outgoing consumers may probably react to identity coordinated promotions when they are in an outgoing circumstance that features and strengthens their outgoing inborn nature or when they wind up in a contemplative circumstance that does not have the fervor and incitement they have to flourish [7]. The accessibility of data and analysis devices to examine identity traits and states continuously, give a productive road to investigating the fascinating collaborations between identity traits and states and how consumers may respond to offer that use such connections. Figure 1 condenses the illustrated chances of utilizing Big Data with regards to consumer research. As we have talked about all through the paper, the abundance of individual consumer information accessible at next to zero cost makes it conceivable to anticipate consumer results, as well as understand consumers' mental needs and inspirations at both the state andquality levels. Understanding consumers' mental states and traits would then be able to be utilized to better match the company's marketing offerings to customers' needs and inclinations, and consequently enhance business and consumer results [8].

5. OPPORTUNITIES AND CHALLENGES

The mix of information about 'what one does' with more profound understanding of 'who one is' offers gigantic chances to support the viability of marketing efforts as well as to enable consumers to settle on better choices. The pre-determination of substance that is in accordance with consumers' mental needs can mitigate the issue of decision over-burden and enable consumers to expand the satisfaction and bliss they to pick up from their decisions. Also, mentally tweaked wellbeing messages are known to be powerful in changing behaviors among patients and gatherings that are in danger [9]. Focusing on profoundly masochist people who show early indications of despondencies with promotions that guide them to self improvement pages or offer professional exhortation, for instance, could have a colossal constructive effect on the prosperity of a portion of the more helpless individuals from society, and even spare lives.

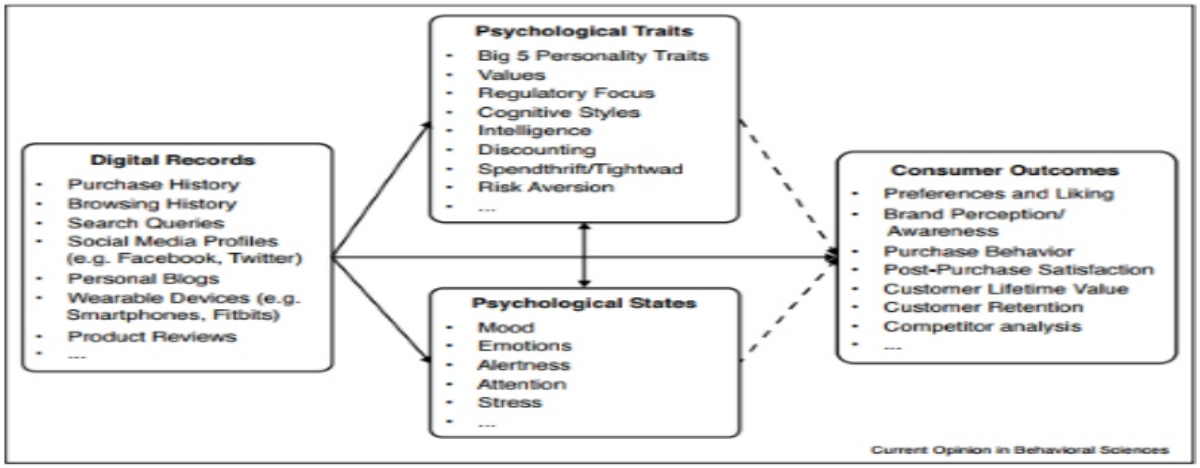

Figure 1: Leveraging Big Data to infer psychological traits and states and affect customer behavior

Nearby the advantages mentally customized marketing gives, it additionally raises new moral difficulties. While mental focusing on can enable consumers to settle on better decisions, it could likewise be utilized as a part of a way that endeavors 'shortcomings' in a man's character. For instance, one could target people who are inclined to habitual or addictive behavior with promotions for an online gambling club, or prohibit them from getting protection advertisements. Truth be told, Facebook was as of late censured for investigating teenagers' enthusiastic or mental state utilizing their Facebook profiles. While Facebook said it doesn't as of now utilize such deductions for focusing on, even the accumulation ofsuch data raised consumers' moral concerns.

This more basic side of progressively customized marketing is reflected when all is said in done open wariness. A 2010 overview of American Internet clients demonstrated that fewer than 20% communicated an inclination for focused promotion, while 64% saw customized publicizing as

‘meddlesome'. In 2012, this suspicion achieved an open top in light of a 'scandal' including the U.S. retail monster Target [10]. Utilizing data-driven proposal algorithms, Target had elevated child gear to a pregnant teenage young lady in Minnesota, whose guardians had already been uninformed of the pregnancy. With the presentation of significantly more modern expectation algorithms that investigate singular behaviors as well as make deductions about a consumers' cozy mental traits and states, these worries are probably not going to improve.

6. CONCLUSION

Taken together, the capacity to anticipate consumers' mental traits and states from their computerized impressions offers energizing new open doors for advanced marketing. We expect the two researchers and experts to go outside the ability to comprehend and expectation of mental states and traits and towards constant 'advancement' of marketing activities based on these forecasts. Much like in the scene in the sci-fi motion picture Minority Report, where publicizing announcements are customized to the passionate condition of the individual strolling past them, organizations will have the capacity to enhance the promoting a consumer is presented to continuously and at a level of detail at no other time conceivable. For instance, one could utilize information about a man's transient heart rate extricated through their earphones to figure out which melody to play next, separate emotions from a man's outward appearance to change the shading plan of a site, or suggest the following vacation destination in another city as a component of the individual's anticipated identity and their present level of physical action. We urge researchers to keep on exploring these energizing open doors.

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Challenges and Opportunities for Digital India

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A B S T R A C T

We are living in arena of technologies and digital world. The 'Digital India' programme, an origination of honorable Prime Minister Mr. Narendra Modi, targets to make government services available to people digitally and enjoy the benefit of the latest information and technological innovations. "Digital India" is an initiative of the Central Government of India "designed to covert or transform India into a global digitized hub" by reviving a rundown digital sector of India with the help of improving digital connectivity and skill enhancement and various other incentives to make the country digitally empowered in the field of technology. The 'Digital India' programme will emerge new progressions in every sector and generates innovative endeavours for gen Next. The motive behind the concept is to build transparent participative and responsive system. This will provide all services electronically and promote digital literacy It is an initiative of government of India to integrate the people of India with Government Departments.. The motive behind the concept is to connect rural areas with high speed internet network and improving digital literacy. Digital technologies which include mobile applications and cloud computing transpire as the catalysts for shaping our world. It aims at ensuring that the Government services are made available to citizens electronically by reducing paper work. The Digital India programme faces the serious barriers in implementation. This paper attempts to highlight the different challenges faced by the Digital India Programme and different opportunities of the programme for the people of the country.

1. INTRODUCTION:

India, a union of states, is the second most populous nation in the Asian region behind China. The country has achieved imposing progress in the field of science and technology and is emerging as one of the strongest economies in the developing world. Information and communication technologies have brought significant changes in the development of the Indian society through information dissemination.

"Digital India" Programme launched by The Honourable Prime Minister Narendra Modi on 1July 2015. The "Digital India" initiative aims at availing digitizing of various individual projects of all central government and ministries like health services, education, and other services that can be delivered to citizens using Information and Communication Technology (ICT) by joining all the areas of India including the Gram Panchayats also at high speed internet using broadband connectivity, in order to focus on the e-governance till 2019. It is rightly said by the honourable Prime Minister of India, Narendra Modi that Information Technology plays important role to make India a digital country, in his words:

India Talent (IT) + Information Technology (IT) = India Tomorrow (IT)

So, Digital India is a way for the government to inspire and connect Indian Economy to such a knowledge savvy world. The program targets to make Government services available to people digitally and enjoy the benefit of the latest information and technological innovations. It brings out many schemes like E-Health Digital Locker, E-Sign, E-education etc. and nationwide scholarship portal. An authoritative umbrella project of the government and blessings for the citizens to bring India to a global platform with participation from people and businesses. This initiative will ensure that all government information and services are available anytime, anywhere, on any device that are user friendly and secured. This transformation will make into reality when every citizen of our country will participate in this transformative impact. Digital India initiative could help in achieving the objectives of:

- Education for all.
- Leadership structure
- Broadband for all
- Information for all
- Globally industry participation and many more [1].

The program strives to provide equal benefit to the user and service provider. The consumers will be benefited by way of saving money, time; physical & cognitive energy spent in lengthy government processes. For e.g. digital ticketing will lead to reduction in queue at ticket counter with online tax-return filing, online resources for booking etc.

The aim of Digital India to give an e-Pramaan and Unique ID based on authentic and standard based interoperable and integrated government applications and data basis. This program will also lead to less paper work and reduction in cost to the government expenses. Government services will be available to every citizen electronically. It ensure that government services are made available to citizens electronically by improving online infrastructure and by increasing internet connectivity or by making the country Digitally authorize in the field of technology. It consists of three main components as follows

- The creation of digital infrastructure.
- Delivering services digitally.
- Digital literacy.

2. OBJECTIVES OF THE STUDY:

The paper has the following objectives:

- To Study the concept of Digital India Programme.
- To study the opportunities of the programme for the people of the country.
- To study the various challenges faced by the Digital India Programme in its implementation.

3. VISION AREAS:

The vision is focused on three key areas:

DIGITAL INFRASTRUCTURE AS UTILITY TO EVERY CITIZEN:

It includes:-

- High speed internet, as a core utility, shall be made available with Public cloud sharable on private space.
- Bank account with Mobile phone would enable participation in digital and financial space at individual level.
- Cradle to grave digital identity –lifelong, authenticable, unique and online.
- Safe and Secure Cyber-space in the country.

DIGITAL EMPOWERMENT OF CITIZENS:

It includes:-

- Universal digital literacy.
- Transportability of all entitlements using the Cloud for individuals.
- Availability of digital services /resources in Indian languages.
- All digital resources available universally.
- All Government certificates /documents to be available on the Cloud.

SERVICES AND GOVERNANCE ON DEMAND:

It includes:-

- Harmlessly integrated across departments or jurisdictions to provide easy and a single window access to all persons.
- Government ministration available in real time from online and mobile platforms.
- Making financial transactions above a threshold, electronic and cashless.
- Edge of GIS for decision support systems and development.

4. LITERATURE SURVEY:

Prof. Singh began with the basic overview of what Digital India entails and led a discussion of conceptual structure of the program and examined the impact of "Digital India" initiative on the technological sector of India. He concluded that this initiative has to be supplemented with amendments in labour laws of India to make it a successful campaign.

Sundar Pichai, Satya Nadella, Elon Musk researched about Digital India and its preparedness to create jobs opportunities in the information sector. He concluded that creating new jobs should be continued with shifting more workers into high productivity jobs in order to provide long term push to the technological sector in India.

Microsoft CEO, Satya Nadella intends to become India's partner in Digital India program. He said that his company will set up low cost broadband technology services to 5lakhs villages across the country.

Digital India campaign is a welcome step in shaping an India of the 21st century powered by connectivity and the technological opportunity that such connectivity offers in terms of services, access. Digital India has three essential components. These include:

- Digital infrastructure creation.
- Digitally Delivering services and resources.
- Digital Education

5. OPPORTUNITIES OF DIGITAL INDIA PROGRAMME:

Though Digital India programme has faced many challenges in its implementation but it has some prospects which are mentioned below –

1. It would bring in public accountability through mandated delivery of Government services electronically.
2. Digital India programme will put an end to corruption system which becomes the main feature of the country.
3. Digital India programme aims to reduce paper work which will help to save trees & protect environment.
4. National scholarship portal, a project under Digital India, will put an end to scholarship process right from submission of student's application, verification, sanction and disbursal to end beneficiary for all scholarships provided by The Government of India.
5. It benefits people of India in every village in terms of knowledge improve by using internet in day to day life.
6. Each person will be having bank account.

6. SCOPE OF DIGITAL INDIA:

The scope of overall programme is:

To develop India for a knowledgeable future by developing central technology for allowing revolution this covers many departments under one umbrella programme. On being transformational, that is to realize IT (Indian Talent) + IT (Information Technology) = IT (India Tomorrow). The programme weaves together a large number of ideas and thoughts into a single, extensive vision, and making the mission transformative in totality. The Digital India Programme will pull together various existing schemes which would be restructured, re-focused and implemented in a synchronized manner for their transformational impact. Digital India targets to provide the much needed sense to the following nine pillars of growth areas.

7. PILLARS:

The government aims to target nine 'Pillars of Digital India' which are as follows:-

7.1 BROADBAND HIGHWAYS:

- Broadband for all rural.
- Broadband for all urban.
- Mandate communication infrastructure in new urban development and buildings.

7.2 UNIVERSAL ACCESS TO MOBILE CONNECTIVITY:

- Increasing networking services.
- To provide universal phone connection
- To connect unconnected areas by using technologies.

7.3 PUBLIC INTERNET ACCESS PROGRAMME:

- CSCs- Made viable, multifunctional end-points for service delivery.
- Post offices- to become multi-service centres.
- It is a national rural internet mission.

7.4 E-GOVERNANCE:

This governance will transform every manual work into fully automation system. It will revolutionize the system in the following ways:

- Effortlessly tracking of assignments.
- Interface between departments for superior production of work.

- Online access to applications i.e. Availability of all databases and information in electronic format.
- Quickly respond, analyse and resolve persistent problems and many more.

7.5 E-KRANTI:

The e-Kranti project provides electronic delivery of services to the citizens. The government has allocated `5billion for the e-Kranti project which includes many sub-level projects discussed below:

- Technology for Education– e- Education
- Technology for Farmers
- Technology for Security
- Technology for Health –e-Healthcare
- Technology for Financial Inclusion
- Technology for Justice
- Technology for Planning
- Technology for Cyber Security

7.6 INFORMATION FOR ALL:

- Citizens have easy and open access to information.
- Online messaging to citizen on special occasions.
- Two way communication between citizen and government.

7. 7 ELECTRONICS MANUFACTURING:

Target NET ZERO Imports is a prominent demonstration of intent. This ambitious goal requires coordinated action on many fronts

- Economies of scale, eliminate cost disadvantages
- Focus areas – Big Ticket Items FABS, Fab-less design, VSATs, Set top boxes, Mobiles, Consumer & Medical Electronics, Smart Energy meters, Smart cards, micro-ATMs
- Taxation, incentives
- Skill development
- Incubators, clusters
- Government procurement

There are many ongoing programs which will be fine-tuned. Existing structures are inadequate to handle this goal and need strengthening.

7.8 IT FOR JOBS:

It will include train people in smaller towns and villages for IT sector jobs, train service delivery agents to run viable business delivery IT services, telecom service providers to Train work force to cater to their own needs.

7.9. EARLY HARVEST PROGRAMMES:

This programme will generate short timeline projects where every manual service is altered by e-service like:

- Implementation of Wi-Fi in all the universities.
- Public Wi-Fi Sports hotspot.
- Educational books to e-books.
- Replacement of manual attendance to Biometric procedure.
- People will use the e-services for entertainment, weather information, latest updates etc.
- School book to be e-books. [2]. Available at

8. APPROACH AND METHODOLOGY FOR DIGITAL INDIA PROGRAMME:

It also evolves policy and standards guidelines, offers handholding and technical support, to undertake capacity building, R&D, etc.

The existing e-Governance initiatives would be suitably revamped to align them with the principles of Digital India. Process Reengineering, Scope enhancement, use of interoperable & integrated systems and deployment of technologies like mobile & cloud would be undertaken to enhance the delivery of Government services to people of India. Success would be identified and their replication will be advanced with required customization and product correction wherever needed.

E-Governance would be encouraged through a centralized initiative to the extent necessary, interoperability of various e-Governance applications, to ensure citizen centric service orientation, and optimal utility of ICT resources / infrastructure, while adopting a decentralized implementation model. The state will be given freedom to design state specific programs.

Adoption of Unique ID would be promoted to facilitate authentication, identification and delivery of benefits. Restricting of NIC would be undertaken to strengthen the IT support to all government departments.

9. CHALLENGES OF DIGITAL INDIA:

As the initiative is new, it is obvious that the programme will face many 6challenges. Some of the challenges which may create problem in its implementation are as follows

a) India is a diversified country in terms of culture. Each state has its own specific language, customs, food habits, laws and traditions. Digital India programe aims to integrate the whole country digitally. Complete integration that is integration of technology and language is one of the main challenges the mission would face in its implementation.

b) There are various internet protocols in different states depending on what kind of software and hardware they implement and chances are that might lead to connectivity glitches. Hence there must be some sort of a directive to standardize all the software protocols. c) Digital India aims to transform the country into a digitally empowered knowledge economy. It is not an easy task. It needs coordination and cooperation between the departments the mission would never be implemented to its full strength. d) Public internet access is one of the pillars of Digital India programme. But in India, poverty and illiteracy stands as major obstacles in internet access. High illiteracy rate act as a major road block in expanding the reach of internet.

e) We live in a world where internet and cyber-crime are inseparable enemies. The entire architecture should be designed in such a way that there is proper authentication done of all the documents put online by citizens and when user wants it is available to the right users at any time with the right authentication. In order to ensure the cyber security the country should have privacy norms.

f) National Optical fiber network ensures broadband reaches in every nook and corner of the country. But to reach broadband connection country wide is not an easy task.

g) Digital India initiation also faces some challenges like: Privacy Protection, Data Protection, Cyber Law, Telegraph, E-Governance and E-Commerce Etc.

Recently, ninth India Digital Summit was been hosted by the (IAMAI) Internet and Mobile Association of India in New Delhi on Jan.2015 to discuss the plans of Digital India Initiative. There the increment in mobile wallets in India for payment and e-commerce infrastructure/recourses was been discussed by a panel, as over 60% of Indian citizens still deal in cash and don't have bank accounts, so in order to establish digital transaction mobile wallets are very essential.

Bipin Preet Singh, Founder and CEO at MobiKwik, said "Consumers can overcome the trust factor in online payments,"

Rajan Anandan, Managing Director at Google India, said: "Enabling content consumption in local Indian languages can greatly push the Internet consumption up."

Dhruv Shringi, CEO of Yatra.com, said: "The next thing to aim for travel companies is personalization of travel purchases such as holiday and hotels packages as also using predictive computing to understand and predict consumer behavior and reacting to it."

Aloke Bajpai, Co-founder and CEO of meta search site ixigo.com, said: "While the growth in desktop is almost zero, it's terrific on mobile," "It is not only mobile first anymore but mobile only soon. Will have to see whether to work any further on evolving our desktop experience."

10. CONCLUSION:

To conclude the digital India program is a flagship programme of the government of India to shape by Technological and connectivity opportunity. It is a vision to transform India into a digitally empowered society and knowledge economy. It is a good effort to develop India. The Digital India vision aims to transform our country into a digital economy with participation from citizens and businesses. This initiative will ensure that all government information and services are available anytime, anywhere, on any device that is easy-to-use, seamless, highly-available and secured. The Digital India program is just the beginning of a digital revolution, if implemented properly it will offers many new opportunities for the citizens. In the theoretical framework, the Digital India programme will be a state of the art network. How far the strategy would yield result in meeting the desired objectives would largely depend on factors which are outside the realm of technologies and tools for digitization.

Although, digital India programme is facing some challenges, yet it has a great impact on India to make the best future of every citizen. We Indians and others should work together to shape the knowledge economy. Various grand companies like Microsoft, Google and Fujitsu will also agree be partner and help the success of Digital India initiative. More employment prospects will open for the youth that will raise the nation's economy. Digital India campaign is a welcome step in shaping India of the 21st century powered by connectivity and the technological opportunity. For successful implementation of Digital India Programme involves lot of hindrances but in the present global context there is no second thought. Therefore it is highly expected to expedite the initiation of the digital India Programme.

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A Survey on Marketing Information and Channels of ICT for Organization Growth and Development

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ABSTRACT

In later years, the setting of globalization in which advertise channel structures and procedures are creating is conveying to a more perplexing idea of promoting channels, with disintermediation or reinter intercession, multichanneling and new parts/specializations that are developing as new issues. In this specific situation, advancement in showcasing channels turns into a complex, multiorganizational, multidisciplinary action that requires coordinated effort and communications crosswise over different elements inside the production network arrange. As of late, the advancement forms in promoting channels have happened with high force and speed, particularly taking after the progressions impelled by innovation that permitted the selection of more effective hierarchical arrangements. Watchwords: Retail; Channel Structure; Innovation in Marketing Channels; Retail Technological Innovation; Global Markets

INTRODUCTION

As a worldwide and intelligent process that grasps all divisions and capacities created both inside and outside the association, show casing's utility is twofold:

- It can ensure the development and support of correspondence and collaboration connections between various operators, both inside and outside the association.
- The promoting capacity oversees advertise data effectively, organizing its securing, stockpiling and dispersal all through the organization, and ensures the presence of a market insight that can be utilized as a part of the procedure of basic leadership.

Then again, development – particularly item advancement – is perceived as a key component during the time spent esteem creation [1].Item development is perceived as an intricate and hazardous process that requires impressive capital and HR inputs. This procedure ought to be created rapidly if the organization needs to stay aggressive inside today's dynamic market- driven situations. Be that as it may, likewise, angles in respect to item dispatch time or market prerequisites must be considered when managing the procedure of item development.

Almost no exploration has been done into the pretended by ICT use in promoting in the achievement of new item advancement (NPD) forms. This is not amazing considering that the new aggressive environment is characterized by an economy extensively in view of concentrated ICT utilize and information as key components of business procedure [2].

ICT AS A VITAL MARKETING FACTOR

In the most recent decade, there has been much accentuation on the significance of collaboration and the accessibility of market knowledge for the improvement of item development. This clarifies the key part that advertising plays in the development procedure, and exhibits that collaboration and market knowledge are two of the key considers the achievement of the new item.

One of the elements that describe promoting action in today's association is the implantation and across the board utilization of ICT. ICT utilize has realized huge changes in associations and created critical advantages, especially in the zones of showcasing and development. Many highlight the significance of ICT as a key component in coordinating showcasing into the NPD procedure. ICT raise the level of advancement inside an organization through the improvement of new items that are adjusted to market needs, and decrease mechanical, vital and promoting hazard.

To put it plainly, ICT can be viewed as an endogenous component of the organization, and a key some portion of administration and showcasing hone today [3]. As an imperative advertising variable, ICT upgrade the NPD procedure by shortening separations and saving money on expenses and time, and in addition encouraging data exchange and the advancement of community oriented conduct that favors hierarchical information and enhances the nature of basic leadership.

REVIEW OF LITERATURE

Weerawardena (2003) [4] suggest that investment between different natural authorities and the openness of market data are enter segments in the accomplishment of new thing advancement. Additionally, as it can be seen above, showcasing centered firms towards the improvement of interest andcorrespondence associations with different administrators, brings the crucial help and data for the new thing to be moved on time, and shapes it to the market's needs and essentials.

Choi and Kimes (2002) [5] dissected booking frameworks in hotels and showed an audit of a part of within development as the going with talk graphs. For each individual cabin, the Property Management System (PMS) is at the point of convergence of both development and hotel operations. This framework is used to manage the room stock, record guest purposes of intrigue and make charging data. It frequently interfaces with various frameworks, for instance, the telephone frameworks and sustenance and drink purpose of offers terminals to allow facilitated charging and organization reporting.

Yelker and DaCosta (2001) [6] analyze the need to consolidate division figures web offerings, for instance, locales, to allow a confirmation of the guests' status to pay to increase salary. Rather than

viewing all Internet arrangements as a singular segment, they recognize the capacity to use dynamic assessing in light of division components given as a noteworthy part of a web booking.

Singh and Kasavana (2005) [7] asked for conjectures for 2007 and 2027. The load up recognized different specific locales, for instance, remote frameworks organization advancement and on-line reservations that they expected that would create in importance over these time portions.

Lehtinen, and Vuorinen,(2003) [8] developed a model of the extent of possible blends of advancement, level of organization regulation and level of individual association (the touch consider) and depict the need to think about these assortments in building organization channels.

Jeevan and Saji (2004) [9] introduce the aftereffects of a review led among the head libraries in Thiruvananthapuram, Kerala to survey the Information Technology appropriation in these libraries. A study utilizing poll and meeting was utilized for getting data about the diverse IT segments valuable for better Library Company and exhaustive and quick data administrations.

OBJECTIVES OF THE STUDY

The principle targets of the review were to break down the example of effect of data correspondence innovation on advertising utilizing by clients, and utilization of ICT on promoting by their delegate connection to Indian Company. Other than this, however the particular destinations of the review are:

- To decide the impact of advancement on showcasing of correspondence administrations.
- To set up the impact of item improvement on promoting of correspondence administrations.
- To discover the impact of the data innovation in transit of showcasing.
- To evaluate the impact of rivalry on promoting of correspondence administrations.

MARKET INFORMATION

The usage of ICT constructs access to market data achieving lower trade costs for rural buyers and businessmen.ICT can expect a key part in making data available to the developing gathering at a sensible cost. In Bihar, around eight thousand Primary Agriculture Cooperative Societies (PACS) at Panchayat level, five hundred thirty Vyapar Mandal Sahyog Samiti (VMSS) at square level and the apex level Bihar State Cooperative Union (BISCOMAUN) are supporting the showcasing needs of agribusiness and joined sections; twenty District Central Cooperative Banks (DCCBs) and crest level State Cooperative Bank (SCB) with wide arrangement of branches (SCB and DCCBs) are considering the necessities of short lived credit essential of the people [10].

With the help of ICT the provincial customers in like manner move data about the rates in the market, the transcendent minimum reinforce cost for his make and the spots where he can hint at change return for the same. Thus it beats any issues between the urban and the nation promotes by making ICT can be used as an effective gadget for provincial client fortifying. The provincial buyer acting only will be prominent procure the data they require once they have induction to the web. The learning got is satisfactory to begin the path toward recognizing and enacting suitable data resources.

REFLECTING ON INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN MARKETING

The mechanical development that portrayed the late twentieth century has prompted to huge change in a collection of new advances – very in the fields of biotechnology, new materials and thing change, and PC and trades development [11]. PC and exchanges advancement, especially, has been subjected to remarkable movement in the past a quarter century.

These advancements have as a general rule framed the world into a worldwide town, engaging correspondence and joint effort autonomous of time and space. ICT has openedthe universe of showcasing, giving sponsors an assortment of new and inventive courses in which they can talk with their clients. Perceiving the criticalness of ICT in advancing has been highlighted by the Canadian Marketing Organization as one of the seven key issues that sponsors are standing up to without further ado. The 1990s were depicted by a burst of new advances including the Internet and the Global Web (www). Digitalization brought along innumerable specific contraptions, things and organizations [12].

The coordination of ICT into advertising practices and the piece of ICT in contemporary advancing sharpen, independently. Additionally, the rethinking of advertising instructive program in the Internet age. There are similarly different reviews that focus on ICT and its application in the tourism and amicability industry. The contributory estimation of the present examination lies in looking over how much sponsors use ICT in their showcasing tries and whether understudies at the CUT, as a logical investigation, are adequately displayed to ICT as an element of their advancing course. The review was driven in Bloemfontein, India.

"Data" in a legitimate setting can be seen as took care of data that is procured from, for example, business records and sales. Data is an essential portion of fundamental initiative and impacts the organization of data in the definitive setting. In spite of the way that calculated, data can moreover be envisioned as a thing which can be obtained or sold. In addition, it can be portrayed as any correspondence or representation of learning, for instance, substances or evaluations in printed, numerical, sensible,

cartographic, account or shifting media outlines. "Correspondence" implies the trade or business of data from individual to individual or beginning with one place then onto the following.

ICT-RELATED MARKETING COMMUNICATION CHANNELS

Showcasing includes an assortment of exercises to draw in potential clients and points, above all else, to create enthusiasm for the items and benefits, and to fortify rehash business. The carefully progressed and aggressive environment in which current organizations work requires an ICT-incorporated advertising approach, where new conceivable outcomes for the advancement of items and administrations could be abused and where advertisers can make more grounded brand loyalties to guarantee a feasible upper hand for their organizations.

It ought to be underscored that, in spite of the fact that ICT opens up new markets andconceivable outcomes, the customary types of promoting is not lessening in their significance. For instance, radio is encountering resurgence with the appearance of satellite and computerized designs. Open air promoting is turning out to be more inventive and, while daily papers and magazines have been adversely influenced by ICT, they are still noticeable showcasing channels. Despite the fact that this review concentrates on ICT in advertising [13], conventional types of promoting will unavoidably frame part of the dialog.

The Internet and the digitalization of data have, together with the spread of the utilization of ICT gadgets, made the setting of E-promoting. E- showcasing has a more extensive importance, as it incorporates not just computerized media, for example, web, E-mail and remote media, additionally the administration of advanced client data and electronic client relationship administration frameworks (E-CRM frameworks). Inside the more extensive E- showcasing area, this segment means to clarify the primary ICT-related advertising correspondence channels that ought to be considered in the general plan of an association's vital promoting methodology. These channels incorporate Internet promoting, web-based social networking showcasing, advanced advertising, portable showcasing and direct promoting.

- **Internet marketing**

The Internet is regularly portrayed as a motor of globalization which thumps down fringes and forces advertise popular government on each country. Without a doubt, the Internet has turned out to be coordinated into the acts of organizations, governments and social developments and has changed the way present day people live and work. Thus, the Internet could be a capable showcasing instrument if misused by organizations.

Other than being another stage for purchasing and offering, the Internet has risen as another middle person for organizations to advance their organizations. As a result of its qualities and the high quantities of clients, the Internet has gotten to be as effective as conventional correspondence stations, for example, TV, magazines and radio (Efendioglu and Igna, 2011). The Internet empowers Internet showcasing, which intends to make, convey and convey esteem to clients. Web showcasing is characterized as the way toward building and keeping up client connections through online exercises with a specific end goal to encourage the trading of thoughts, items and administrations that fulfill client needs.Web advertising can likewise be depicted as the way toward utilizing the Internet to accomplish promoting goals and to bolster the whole showcasing process (Ngai, 2003). It is basic that organizations have an easy to use site in conjunction with online limited time methods, for example, web indexes, standard showcasing, E-sends and coordinate connections from claim and different sites.

• Social media marketing

The ascent of online networking is quickly changing the route in which organizations work and impart. online networking satisfies the central human need of correspondence, and the rise of web-based social networking could be viewed as the greatest advancement since the Industrial Revolution. Of all the distinctive sorts of E- media, online networking organizing destinations, for example, Face book, MySpace, Twitter and YouTube have created the most publicity. The expression "online networking" is the new popular expression in the correspondence and advertising industry. Tuomela (2010) declares that long range interpersonal communication destinations work by giving the stage to correspondence between the clients. Consequently, online networking advertising has developed in prevalence and significance, for example Facebook, a person to person communication website, which has lured a wide assortment of organizations to set up business profiles.

• Digital marketing

Urban (2004) recommends that computerized advertising may utilize the Internet and IT to amplify and enhance customary promoting capacities. Advanced showcasing is characterized as the act of advancing items and administrations utilizing computerized dissemination diverts to achieve buyers in a convenient, important, individual and practical way. As per Chester and Montgomery (2008), financial speculators are progressively putting resources into the accompanying three sorts of computerized advertising, to be specific interpersonal organizations, (for example, Facebook, Twitter and MySpace), versatile innovation, (for example, Blackberry and iPhones) and online recordings, (for example, You Tube). Different types of advanced advertising incorporate podcasting, blogging, standard advertisements and video streams.

- **Mobile advertising**

Compact development has catalyzed data science on a flexible level, changing the pace of correspondence since the 1990s. The improvement from desktop to flexiblecorrespondence is a key standpoint change that has grown prominently in the latest decade. A quarter century individuals would not have imagined the ceaseless system made possible by versatile development. The Mobile Marketing Organization describes adaptable advertising as a promoting; publicizing or arrangements improvement went for influencing and informing buyers by means with respect to a compact channel.

LINK BETWEEN MARKET RIGIDITIES, ICT ADOPTION AND ICT-GROWTH

The possibility that market rigidities hamper GDP development has been very much reported in the macroeconomic writing [14] for a late survey. Considerably less is known, nonetheless, with respect to the connection between market rigidities and new advances appropriation. The presence of such connection has been inescapable in the hypothetical writing on development and General Purpose Technologies (GPTs), notwithstanding, albeit significantly less archived observationally.

As an outcome, still little is known at the experimental level with respect to the impact of market rigidities on new advances dispersion all in all and on ICT dissemination specifically. The focal thought in writing on GPT takes after the conventional Schumpeterian contentions: markets should be more adaptable, particularly amid times of fast mechanical changes where firms and areas of exercises must embrace and adjust new innovations to their particular prerequisites with possibly significant, in spite of the fact that not really quick, proficiency picks up.

With everything taken into account inventive demolition could be made less demanding if markets are sufficiently adaptable keeping in mind the end goal to re-distribute gainful assets from conventional to new parts of exercises and from the utilization of old to the utilization of new advances. The re-distribution of assets is especially essential on account of GPTs, for example, ICT given that the broad utilization of ICT is probably going to offer ascent to a developing and self-fortifying number of uses with direct rate on monetary action both as far as general financial development additionally as far as monetary effectiveness. In spite of the fact that these qualities were shared by past innovative unrests, they are frequently considered as unequivocally exacerbated on account of ICT [15].

CONCLUSION

It could in this way be surmised that publicists wind up in a move period – while ICT in advertising is immovably creating, there is still an essential highlight on using routine advancing procedures. It could in like manner further be assumed that the understudies reviewed for this examination require more

direct presentation to applying ICT in advertising. The showcasing engineers offered at especially UoTs, with their consideration on expert guideline and planning, should attractively arrange understudies for the universe of work.

This does not simply join the speculative perspectives of ICT in advancing, furthermore showing understudies to veritable entertainments. The going with recommendations can thus be proposed: - Suitable labs should be developed where elevating understudies could get to the diverse sorts of ICT devices, for instance, PCs, iPads, iPods and propelled cameras. - Lecturers should be capable about ICT in advertising. - Experts from business and industry should be utilized to teach understudies on the most capable strategy to apply ICT in advertising. - Practical assignments on applying ICT in promoting should be a bit of the instructive modules of advertising understudies. This should join Internet promoting, and in addition the entire cluster of ICT instruments and contraptions.

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Need and Challenges for Software Engineering in Pervasive Computing

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A B S T R A C T

Moving away from decades of machine- centric computing and designing pervasive human- centric computing, the new wave of computing, a reality revolutionizes the relationship between humans and computing systems. The growing interest in the use of context-awareness as a technique for developing pervasive computing applications that are flexible, adaptable, and capable of acting autonomously on behalf of users. In order to implement the vision of pervasive human-centric computing, it is necessary to reform software engineering education to well prepare graduates of software engineering programmes for the new opportunities and challenges of software engineering in the pervasive computing era. The software challenges to turn such pervasive or ubiquitous computing environments into reality are enormous, to say nothing of software , hardware and social challenges. In this paper, we review some of the work of software components and analyze where our solutions are lacking and must be adapted for pervasive computing..

1. INTRODUCTION

It is widely acknowledged that pervasive computing introduces a radically new set of design challenges as compared with traditional desktop computing. In particular, pervasive computing demands applications that are capable of operating in highly dynamic environments and of placing minimal demands on user attention. late Michael Dertouzos, Director of the MIT Laboratory (1974-2001) for Computer Science, who pioneered MIT Project Oxygen to make pervasive human-centric computing a reality, pointed out the need for pervasive computing. He stated the following:

If computers are to live up to the promise of serving us, they will have to change drastically and never again subject us to the infuriate experiences we all have shared [1].

It is envisioned that pervasive computing systems will help people to achieve more while doing less. These systems will:

- Understand user when he speak to them;
- Get us the information for user when and where we want it;
- Help us work with other people across space and time;
- Adapt on their own to our individual needs and desires [1].

In the pervasive computing era, there will not need to carry our own physical devices with us any more. Instead, configurable generic devices, either embedded or handheld in the environment, will bring computation to user, whenever he need it and wherever he might be. As user interact with these anonymous devices, they will adopt our information personalities. They will respect our desires for security and privacy. The user need not have to type click, or learn new computer jargon. Instead, he will communicate naturally, using gestures and speech that describe user intent (send this to Soni or print that picture on the nearest colour printer), and leave it to the computer to carry out our will [2].

Pervasive human-centric computing systems will change how businesses, organizations and governments work with each other, as well as how individuals interact. It represents the dawn of a new era in Information Technology (IT) [1].

To shift the focus of computing from machines to humans, major changes are required not only in technologies and systems, but also in the approach to deploying , developing and managing technologies and systems. Weiser presented his vision for pervasive human centric computing in 1991. He further articulated his vision as follows:

There is more information available at our finger tips during a walk in the woods than in any computer system, yet people find a walk among trees relaxing and computers frustrating. Machines that fit the human domain instead of forcing humans to enter theirs will make using a computer asrefreshing as taking a walk in the woods [4][3].

2. MOTIVATION

Challenges which are based on natural characteristics of pervasive computing systems (i.e. dynamism , mobility, and heterogeneity) can be evaluated from a more domain specific perspective, that is, e-learning in our case. E learning refers learning which uses muliple technologies such as internet, television etc. in a manner pointed out by [5]:e-enhancements of models of learning. That is to say that; using technology to achieve better learning outcomes, or a more effective assessment of these outcomes, or a more cost-efficient way of bringing learning environment to the learners [5].

Hence, we particularly list following basic interrelated requirements for such pervasive learning environments:

(1) device independence: applications and data should be always accessible without any dependence on device

(2)application independence: data should be always accessible without any application dependence,

(3) adaptivity and adaptability: learning environment and elements of this environment should dynamically adapt according to context of learner(s) and users should be able to configure such environments such as composing/decomposing applications and data

(4) collective operation: applications in such domain must be able to collectively operate for the benefit of users in a seamless manner. Adaptivity is long studied both in adaptive web systems and adaptive e-learning systems [6], and in such systems adaptivity is generally considered as an aspect between user and application based on user profiles and models.

Pervasive human-centric computing systems are dedicated systems that are capable of sensing, measuring, monitoring, predicting and reacting to physical world conditions. To support a wide range of human activities, pervasive human-centric computing systems must be:

Pervasive: should be available everywhere and accessing the same information base through every portal .

Nomadic: allowing users and computations to move around freely to meet the users' needs;

Embedded: sensing and affecting the physical world; Adaptable: providing flexibility and spontaneity in response to changes in the operating conditions and user's requirements ;

Intentional: enabling people to name services and software objects by intent;

Powerful yet efficient: freeing itself from restriction imposed by bounded hardware resources, addressing system constraints imposed by user demands and available power or communication bandwidth;

Eternal: never requiring shut down or reboot while components are added or removed in response to errors ,demands, or upgrades [2].

In a pervasive computing environment, user and perceptual technologies will directly address human needs and consist of the following:

Knowledge access technologies: offering vastly improved access to information and customized to the needs of users (ie people, applications and software systems);

Collaboration technologies: enabling the formation of spontaneous collaborative regions that accommodate the needs of mobile people and computations, and also provide support for recording and archiving video and speech fragments from a variety of sources and/or events;

Perceptual technologies like speech and vision technologies: enabling communication with devices, networks and software to extend the range of user technologies delivered to all places.

Automation technologies: offering natural, easyto-use, customisable and adaptive mechanisms for automating and tuning repetitive information and control tasks;

3.CONTEXT AWARE PERVSIVE COMPUTING

Context aware computing aims to enable device to provide better service for people through applying available context information [7].

Above a generic definition of context aware computing is given, which emphasizes the relation between user, context and computing, but how do one apply available context information? Although multiple categorizations for context-aware systems are already given [8], one can prefer to re-interpret these categorizations based on adaptive systems, particularly according to adaptive web systems. This is because one can defined adaptivity as a key factor of intelligence and as a key relation between context and computing for context-aware computing systems. Therefore by referring to [8] and the field of adaptive web [6] for categorization of context aware computing applications, we propose below categorization:

(1) context based filtering and recommendation of services and information: examples might include accessing the history of a nearby object , finding the nearest printer etc.,

(2) context based service and information searching:

e.g. location aware query rewriting for a search for available restaurants (query rewriting is a technique used in adaptive web systems for information filtering by rewriting a user query according to the user profiles) etc.,

(3) context based presentation and access of information and services: e.g. selecting voice when screen displays are not available (multimodal information presentation and user interfaces), dynamic user interfaces etc.,

(4) context adaptive navigation and task sequencing: adaptive navigation is a technique employed in adaptive web systems. The user can extend this idea in pervasive computing since a user's interaction might consist of multiple related sub-tasks in relation with his goals and might lead to context aware task sequencing,

(5) context based application and services modification/configuration : this need mainly arises from varity of devices available in the environment, e.g. disabling particular features depending on the capabilities of target device,

(6) context based resource allocation: this might include allocating physical recourses (e.g. memory, even non-hardware physical resources) for the use of other entities in the setting (e.g. , users , applications etc.).

(7) context based actions: [9] proposes three levels of context dependent automatic actions: manual, semi- automatic, [10] and notes that fully automatic actions based on context are rarely useful, and incorrect actions can be frustrating.

It is worth to note that, adaptive behaviors of context aware systems are not necessarily need to depend on the present context, rather such systems should also be able to adapt dedicately by making use of present context or historical context to predict future context of the setting. An example is given in [11] where a user walks through the building and submits a printing request, the selected printer should not depend on the user's current location but rather to his final destination. According to presented categorizations and elaborations, we extend previous definition of context-aware systems as follows:
Context aware computing aims to enable better service delivery through proactively adapting access,use, structure and behavior of information, applications, services and physical resources with respect to available context information.

An up-to-date and specific example is a famous social networking website, Facebook. This web application provides users with the contextual information of their network (by means of notifications) like who watches, reads what or who becomes friend with whom. In this way users can identify people with similar likes and arrange their own environment accordingly. Such case is also of use in the domain of e-learning, a system can provide users with the contextual information of the environment and other learners like who read what, who knows what, who takes the same courses or who works on the same problem, so learners can find appropriate mentors or construct a learning path for themselves. Such approach might be called as environment awareness" for users which is counterpart of context-awareness for machines.

4. STRATEGIES FOR SOFTWARE ENGINEERING CHALLENGE IN PERVASIVE COMPUTING

As we know that to achieve real life application of pervasive computing is challenging task. To implement this a lot of challenges have to resolved for software engg. discipline and software component. The suggested core strategies for software engineering education reform include the following:

1. Redesign of software engineering curricula by integrating pervasive human-centric computing and autonomic computing into the curricula;
2. Systematic integration of applied and experimental research in software engineering for pervasive human- centric computing into software engineering education;
3. Industry-academic partnerships in both research and education;
4. Engaging students in cross-disciplinary research and development;
5. Institutional support and funding for cross disciplinary collaborations in research and education;
6. Fostering life-long learning;
7. Systematic updating of the contents and structure of software engineering curricula.

It is necessary to restructure software engineering curricula by integrating pervasive human-centric computing and autonomic computing into the curricula [12][13][14].

The rapidly evolving and multidisciplinary nature of pervasive human-centric computing and autonomic computing requires the systematic integration of applied and experimental research into software engineering education to enhance students' learning experiences. Engaging software engineering students in applied and experimental research helps them to acquire invaluable experience that they cannot gain by simply reading technical articles and attending lectures.

To further enhance students' learning experiences, it is crucial to develop and nurture industry-university partnerships in research and education. This will also help students to work with industry sponsors while enhancing their hands-on experiences, as well as their technical competences and skills [12][13][14-18].

Furthermore, the multidisciplinary nature of pervasive computing requires collaborations in educational and research activities among field experts from different areas, as explained in earlier parts of this article. Hence, it is essential for engineering educational institutions to foster cross disciplinary collaborations in research and education so that students can engage in collaborative, multidisciplinary projects with faculty and other field experts and professionals across various fields from universities,

industry and research organizations. This will also help students to enhance and learn their engineering knowledge and skills, as well as their professional skills (e.g. teamwork, written and verbal communications, etc).

Collaborative multidisciplinary projects require extra efforts to ensure effective and productive cooperation among all the people involved. Thus, it is critically important to change the culture, funding structure and faculty performance evaluation system in academia to provide the necessary institutional support and funding for cross-disciplinary collaborations among faculty from different departments, colleges, and universities, and other researchers from industry and non-academic institutions.

Due to the nature of software engineering for pervasive computing and autonomic computing, software engineers need to be strongly committed to life-long learning and regularly update their technical knowledge, competences and skills. To help graduates become self- motivated and life-long learners, it is crucial to provide students with opportunities to acquire both the awareness of the necessity of life-long learning and the knowledge, skills and abilities to engage in life-long learning. In order to ensure that software engineering educational programmers provide the best learning opportunities for students, it is crucial to maintain the flexibility of software engineering curricula, and to update systematically the contents and structure of the curricula.

4.1 Software components for pervasive computing

The pervasive computing environment drive us to face the need for components and their boundaries more clearly. Pervasive services will have to be composed from individual ―components‖ residing in the large number of heterogeneous computing elements. The hardware domain itself will drive a natural boundary between components. This may be the most clear-cut definition of a component. A component will be an independently deployable piece of software that resides on one hardware component and provides a service element heterogeneity The most striking characteristics of software components in the pervasive computing environment are the need to deal with heterogeneity and the need for dynamic (ad hoc) adaptation to, and interaction with, communicating components. Current component models are homogeneous in the kind of components for example, Java Beans components are for desktop environments while Enterprise Java Beans are for server and enterprise- wide components. To make application evelopment manageable, we probably need a single component model that is ―scalable‖ in the sense that it supports the development of components of various granularity, components that can reside in tiny computing elements. [Jazayeri95]. While language-specific components are still important, the pervasive environment requires us to also deal with heterogeneous components. The work of Johann Oberleitner [Oberleitner01] deals with the heterogeneity of component models. He has

designed and built the Vienna Component Framework (VCF) that captures the essential characteristics of different component models such as simple X-Windows components ,COM, CORBA, Java Beans, Enterprise Java Beans. The VCF provides foundational support for (CBSE) component-based software engineering. It is used as the lower layer of a CBSE environment called the Component Workbench [Oberleitner02]. The Component Workbench provides transparent access to each component model and allows applications to be built from components coming from different component models. It also supports the user in maintenance activities such as replacing components with other components. For example, if an application is to be moved to an environment where a needed component is not available, that component can be replaced with an equivalent component in the new environment. Consider an application that is built in the MS Windows environment and it uses the Internet Explorer as a component. In moving the application to a UNIX environment, the browser can be replaced by a Mozilla or Opera browser. The Component Workbench supports this replacement by helping the user match interfaces, methods, and attributes from one component to another component.

The Vienna Component Framework captures the common characteristics of different component models by providing a uniform type system across component models . It supports an event-based communication mechanism for the interconnection of components. It also offers an architectural description language that describes the composition of an application in terms of components.

One of the key problems of building applications out of components—component based software engineering— is what to do if the component you need is not available in the catalogs you have. Clearly, no catalog will have every component that an application developer needs. But, often, there will be a related component, or one that is ―almost‖ the one needed. There are several possible paths to take in this case. One is for the developer to modify the related component to make it fit user needs. This approach defeats the purpose of component-based development because of the fundamental reason that it breaks the separation of concerns between component development and component usage. A more effective approach is to automatically ―adapt‖ the existing component to the need of the application. Ideally, with automatic adaptation, the component developer can provide a minimal catalog of components but the user gains the benefits of a larger catalog. The goal in the component work reported in [Jazayeri95] was to use generic programming to build powerful yet minimal catalogs. Thomas Gschwind's dissertation [Gschwind02] concerns the topic of automatic component adaptation and introduces a particular kind of adaptation called ―type-based adaptation.‖

Modern languages such as Java, and modern component models such as Cobra Components support strongly- typed components and provide mechanisms for querying the type of the component at run

time and type-based adaptation exploits these features to automate the adaptation process. The Component Workbench uses type-based adaptation to support the replacement of components from one component by components from another model.

Type-based adaptation is also a good fit for pervasive computing environments because the communication protocols they use and the devices that need to communicate with each other are not known a –priori.

The Vienna Component Framework and type-based adaptation are clearly two important ingredients for dealing with the heterogeneity of components that will have to face. But they are only preliminary steps towards meeting the wide heterogeneity and dynamicity that is expect to face pervasive computing environments. Components will have to compose dynamically and adapt dynamically. Versioning and legacy issues associated with such dynamically evolving services and their components will pose enormous challenges for software engineers.

5. CONCLUSION

The vision for pervasive human centric computing, the new wave of computing, cannot be implemented without software engineering programmers. This article presents the necessity of integrating pervasive computing into software engineering curricula and presents a set of suggested core strategies for integrating pervasive into software engineering education.

The suggested core strategies include redesigning software engineering curricula

To incorporate pervasive computing into the circular systematically integrating pervasive computing the search into education, engaging students in applied and experimental research ,establishing and nurturing industry-academic partnerships in research and education, providing institutional support and funding for cross-disciplinary collaborations in the search and education, systematically updating the contents and structure of software engineering curricula to better prepare students for the new challenges and opportunities of software engineering and software component to make feasibility of pervasive computing in real life application era.

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