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Research Paper: Uncovering User Value Generation Techniques Deployed by Footlocker on Instagram for Customer Engagement

Abstract of the Paper:

With 300 million monthly visitors, 300 million daily active users, 4.2 billion daily likes and over 95 million photos / videos per day, Instagram has become the favorite channel for brand engagement. This paper analysis the user value generation techniques by global athletic footwear and apparel retailer, Footlocker, in their scheme of customer engagement.

Key Words: Instagram, Customer Engagement, Footlocker

Introduction:

Word of Mouth has been long considered as the "holy grail" of achieving market credibility & trust for a brand. In today's digital age, e(WoM) has been the norm and has gained increased prominence with the concept of customer engagement. Though there are many platforms which help a brand to achieve the objectives of customer engagement, it is Instagram which has been accredited by customers to be the most engaging of all. With 300 million monthly visitors, 300 million daily active users, 4.2 billion daily likes and over 95 million photos / videos per day, Instagram is a channel which is hard to be overlooked by any brand. Though there are many efforts undertaken by marketers to engage with their customers, this paper analyses the user value generation techniques by global athletic footwear and apparel retailer, Footlocker, in their scheme of customer engagement.

About Footlocker:

Foot Locker Retail, Inc. is an American sportswear and footwear retailer, headquartered in Midtown Manhattan, New York City. It was established in 1974. Foot Locker was earlier known as F. W. Woolworth Company ("Woolworth's"). The company operates the "Foot Locker" chain of athletic footwear retail outlets, Kids Foot Locker and Lady Foot Locker stores. It also operates Champs Sports, Footaction USA, House of Hoops, and Eastbay. The company's uniform for the employees resembles those of referees and is a trademark of the brand. For the fiscal year 2015, the company reported net income of \$541 million.

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DREAM, BUILD & GROW: UNLEASHING THE ENTREPRENEURIAL POTENTIAL

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Bandhan-The Bank Made and the Making Journey

Dr. Kapil Khattar¹

ABSTRACT

There have been many books on microfinance, in India and overseas. Most of them have been written either from the point of view of the borrowers-how microfinance has changed their lives-or are academic studies on how such entities work, the different models of microfinance, risk management, etc. Bandhan: The making of a bank by TamalBandyopadhyay is different-it is written from the point of view of the organization. It's about how a microfinance structure is built, and about entrepreneurship. It does not project Bandhan founder Chandra Shekhar Ghosh as a messiah for the poor, or as an agent for social change, but as an entrepreneur who seems to have hit upon a magic formula-running a profitable business and at the same time doing good for the poor. It is a celebration of entrepreneurship.

Keywords: Bank, Problems, Business, Entrepreneur

INTRODUCTION

A MAN WITH UNCOMMON SENSE

In one of the management committee meetings of Bandhan Bank, at its headquarters in Kolkata, a few months before the bank was launched, chairman and managing director Chandra Shekhar Ghosh narrated a story: "A gentleman was seen standing on a railway platform, asking the station master many questions. His first question was what time will the Poorva Express come from Delhi? And the next, what time will Toofan Express go to Delhi? Do you know, why was he asking such questions?" Nobody in the senior management team had the answer. "He wanted to cross the railway track," Ghosh quipped, adding, "We cannot do that." "Have you ever seen the driver of an ambulance being questioned by the traffic police? We need to behave like an ambulance... Of course, there will be problems but we will find solutions and move ahead. Don't brood over problems. Let's solve them."

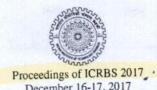
This is quintessential Ghosh-an entrepreneur who believes in action, more a doer than a thinker-a doer, driven by a strong, earthy common sense. In another such meeting, I heard him say, "There are no words like 'if', 'by chance' in my dictionary." "Why not do it today? Let's start. We don't have time," is a typical Ghosh expression to convey his sense of urgency. This may prompt many to brand him as a risk-taker. He is probably that, but not a gambler. There is logic behind every risk that he takes. Enamul Haque of ASA International told me that Ghosh did not pay attention to one of ASA's key suggestions. "We wanted him to go slow on expansion but he was going ahead at breakneck speed; he is a risk-taker but has performed very well, beyond our assumption." Brij Mohan of SIDBI too has the same impression of Ghosh. Once at the SIDBI guest house at Lake Town, Kolkata, when-

¹Professor, Jagannath University, Jaipur E-mail: kapil.khattar@jagannathuniversity.org

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An Analysis of Self-Reliance as a tool for Sustainable Soft Skill Development of Management Students

Gopika Kumar¹, Vaishali Sharma²

¹Assistant Professor, Jagannath International Management School, Kalkaji, New Delhi gopika.kumar@jagannath.org, gopikakumar@gmail.com

²Head of Department, Jagannath University, Chaksu Campus, Jaipur vaishali.sharma@jagannathuniversity.org

Abstract: Skill development in the domain of self-reliance to achieve a sustainable development of management students is to be embedded in the curriculum.

Purpose: To estimate the impact of development of self-reliance skill in management students as a result of soft skills training programs.

Methodology: Experimental and Control Group designs have been used over a sample of 150 students using a structured questionnaire

Findings: The impact of self-reliance skills training has revealed that there are significant differences and with such training sessions, skills necessary for sustainable development can be enhanced.

Managerial Implications: Educational institutions, government and corporates must embed self-reliance as an indispensible tool for sustainable skill development.

Scope for future work: Further studies on components of self-reliance and relative effectiveness of each can be undertaken.

Limitations: Daily life experiences and individual personality traits are not taken into consideration for measuring effects on sustainability.

Keywords: Self Reliance, sustainability, soft skills training program, skill development

1. INTRODUCTION

The education industry is rapidly changing and as time has progressed the distinction between hard and soft skills has come forth and today both occupy an important role as compared to yester years. Soft skills has gained importance in the recent few years but in spite of that many management colleges have overlooked the same and not included many skills to be imparted as a part of the course curriculum. Through various studies it has been indicated that self-reliance skill can develop self-awareness and self-initiative f students to achieve sustainability as a skill required for employability.

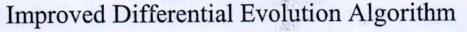
This research paper is an empirical evidence to the fact that the management colleges need to incorporate self-reliance skill as a part of their soft skill curriculum and is the only way to ensure sustainable development for successful placement opportunities. This paper is based on a comparison between those students given the opportunity to learn and absorb self-reliance skills sessions in the form of soft skill sessions and those who have yet not experienced the same.

2. DEFINITION

According to Hewitt Sean (2008) soft skills are "non-technical, intangible, personality specific skills" which determines an individual's strength as "a leader, listener and negotiator, or as a conflict mediator". Soft Skills classified as the non-technical skills in the stream of self-reliance which propagatesselfinitiative and self-directed action and decision making forms the basis for sustainable development. Education in the sector of sustainable development for enabling students who are vigilant, sensitized and analytical is the approach the institutions need to adopt for the future .(Barth, M., Godemann, J., Rieckmann, M., & Stoltenberg, U. 2007). In Soft Skills Self Reliance is the major component for imparting training for sustainability. Self-Reliance as defined as the ability to decide and take action without the influence of others independently. Self-Reliance covers up all areas of selfawareness, self-directed learning, proactive approach and a decision maker. This is the only skill vital and important for the students to become sensitized and socially aware and critical. Education system is responsible for fulfilling the

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Sanjay Jain¹, Sandeep Kumar², Vivek Kumar Sharma³, Harish Sharma⁴

^{1,2}Amity University Jaipur, India ³Jagannath University, Jaipur, India ⁴Rajasthan TechnicalUniversity, Kota, India ¹sandpoonia@gmail.com

Abstract: Differential Evolution (DE) is an evolutionary approach to unravel complex optimization problems. The DE is a straight forward and very popular population based stochastic Algorithm. DE outperformed other competitive evolutionary algorithms when measured over benchmark problem as well as actual optimization problems in terms of performance. The major drawback of DE is early convergence and stagnation at sub-optimal points, like other stochastic optimization algorithms. So as to overcome these problems this paper presents hybrid of DE with levy flight search strategy. The anticipated algorithm tested over a set of benchmark problems to demonstrate its superiority over other popular modification of DE.

Keywords: Evolutionary Algorithm, Bio-Inspired Algorithm, Levy Flight Search, Computational Intelligence.

I. INTRODUCTION

Optimization is the process of finding most suitable solution with specified set of constraints. It is in nature of human being try to get optimum solution for each problem either it is small of complex real world. Due to advancement in computing technologies and algorithms it is very easy to solve large optimization problems. But still large number of problem exist whose search space is very large and these problems are not tractable by classical optimization techniques. In order to find the solution of these difficult optimization problems, metaheuristics are very useful and always gives us nearest to optimal solution. Evolutionary algorithms (EA) are also very useful while solving optimization problems. Evolutionary algorithm follows the principles of natural evolution that can be easily observed in nature and EAs make use of this principle to get best solution to a solver problem. EAs are stochastic population based optimization algorithm. These algorithms make use of evolution as a model to get rid of large computational problem. The computational problems require search through many possibilities to find a particular solution and search space for these problems is too big. To get better solution of these problems, algorithms need to be adaptive also. EAs are adaptive in nature.

The DE [1],[2] was developed by Storn and Price in year 1995. The DE is a powerful stochastic optimizer in class of EAs. The DE algorithm is very useful to get solution of non-linear, non-convex and multi-model functions. Various

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researchers and scientist are doing research on DE and continuously enhancing its performance. The performance of DE depends on two contradictory processes, intensification of best possible solutions and diversification of search space. Recently Swagatam Das et al.[3],[4] carried out a detailed survey on DE algorithm and identified that the best performance of DE yet not depicted on computationally large problems. Still there are possibilities of improvement in De like fine tuning of parameters. There are number of methods proposed for adaption of control parameters (F and Cr).

DE has a number of stratagems according to selection techniques for the objective vector it also depends on quantity of difference vectors in use and the nature of crossover[5]. This research make use of DE/rand/1/bin format, 'rand' says that the objective vector is taken at random, '1' indicates the quantity of differential vectors used and "bin" indicates that it make use of binomial crossover. The DE is one of the popular metaheuristics as it is very simple in implementation and pertinent to a wider class of problems.

DE algorithm has an initial population (NP) of probable solutions. It represent an individual by a vector of dimension $D(x_{i1},x_{i2},...,x_{iD})$, i=1,2,...,NP. DE has three major steps: mutation, crossover and selection. It starts with arbitrarily generated and evenly distributed initial population. Subsequently it repeatedly applies mutation, crossover and selection process in order to engender a fresh population.

A. Mutation Phase

This phase engenders a try out vector for every candidate solution of the present population. An objective vector is altered by means of a biased differential to produce the try out vector. The process of creating a test vector $v_i(t)$ from parent vector $x_i(t)$ using mutation operator for generation counter t outlined as follow:

Choose an objective vector $x_{il}(t)$ and a couple of candidate solution x_{i2} and x_{i3} from the population in such away that $i \neq i_1 \neq i_2 \neq i_3$.

The Equation (1) is used to find out the try out vector.

 $v_i(t) = x_{i1}(t) + (Scale_Factor) \times (x_{i2}(t) - x_{i3}(t))$ (1)

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Here Scale_Factor \in [0,1] represent the scale factor of mutation [1].

B. Crossover Phase

This phase generates an offspring $x'_{i}(t)$ with the help of parent vector $x_{i}(t)$ along with the try out vector $u_{i}(t)$ using Eq.(2).

$$\dot{x_{ij}}(t) =
 \begin{cases}
 v_{ij}(t), & \text{if } j \in J \\
 x_{ij}(t), & \text{otherwise}
 \end{cases}$$
(2)

Here J represent a set of crossover points, $x_{ij}(t)$ represent the j^{th} member of the vector $x_i(t)$.

C. Selection Phase

The selection process chooses best fitted solution for next iteration. The selection of solution for next iteration done based on fitness of individuals. It applies greedy selection between parent and offspring, better one is selected for next step and other one is discarded. Selection phase make use of Eq.(3) to choose superior one.

$$x_i(t+1) = \begin{cases} x_i^j(t), & \text{if } f(x_i'(t)) > f(x_i(t)) \\ x_i(t), & \text{otherwise} \end{cases}$$
 (3)

The equation (3) maintains the quality of population. After initialization DE repeat these three steps to find optimal solution. The very first step mutation explores the search space, the second step crossover utilizes best solution from previous step and selection step imitates the survival of fittest. Exploration of search space and selection of the best fitted solutions decides the performance of DE.

Next section of this paper discusses some recent development on DE followed by levy flight search process. The newly proposed algorithm summarized in part III. The experimental setup for the planned method is detailed in part IV and part V has conclusion followed by references.

II. RECENT DEVELOPMENTS IN DIFFERENTIAL EVOLUTION

The Differential Evolution is very popular because of its minimalism and ease of implementation. In this strategy, basic vector mutated with the weighted difference of different individuals from current population. Since its inception DE has gone through various modifications, few of them are discussed here.

The mutation strategy play important role in performance of DE as it explores the solution search space. Better exploration of search space provides more chances to exploitation of good solution in subsequent phases. Various mutation strategies are developed for DE [3],[4].

DEFinition 1 $v_{i}^{'} = v_{r1} + (Scale_Factor) \times (v_{r2} - v_{r3})$ DE/best/1 $v_{i}^{'} = v_{best} + (Scale_Facor) \times (v_{r2} - v_{r3})$ DE/rand_to_best/1 $v_{i}^{'} = v_{r1} + (Scale_Facor)_{1} \times (v_{r2} - v_{r3})$ $+ (Scale_Facor)_{2} \times (v_{best} - v_{r1})$ DE/current_to_best/1 $v_{i}^{'} = v_{i} + (Scale_Facor)_{1} \times (v_{r2} - v_{r3})$ $+ (Scale_Facor)_{2} \times (v_{best} - v_{i})$ DE/rand/2 $v_{i}^{'} = v_{r1} + (Scale_Facor)_{1} \times (v_{r2} - v_{r3} + v_{r4} - v_{r5})$ DE/best/2

 $\dot{v_i} = v_{best} + (Scale_Facor)_1 \times (v_{r2} - v_{r3} + v_{r4} - v_{r5})$

It is experienced that *DE/rand/1* strategy is comparatively good than *DE/rand/2* and *DE/best/1* has higher speed of convergence than *DE/rand/1* but face the problem of stagnation. The *DE/best/2* strategy perform equivalent to *DE/rand/1* for low dimensional problem but failed with higher dimensional problems. *DE/rand_to_best/1* strategy is analogous to Particle Swarm Optimization algorithm and has better rate of convergence than *DE/rand/1* but stagnation is again a big issue. The *DE/current_to_best/1* strategy gives better results in comparison to other strategies. A trigonometric mutation strategy was developed by Fan and Lampinen[6] with the intention of improvement in performance of DE. In place of binary crossover few researchers applied arithmetic crossover also.

Change in value of scaling factor F provides adaptability and higher rate of convergence. H. Sharma et al. introduces fitness based position update in DE[7] and enhance exploitation potential of DE. Levy flight based local search[14] also included by H. Sharma et al in DE. V. P. Sharma et al.[16] introduced generation based evolution DE. Detailed survey of DE presented by Das et al. in 2011[3] and 2016[4]. They identified ups and downs of recent modifications in DE and listed applications of DE.

III. PROPOSED STRATEGY IN DE

Generally local search strategies are considered as population based stochastic algorithms. Here one of the important tasks is to take advantage of the available acquaintance on the subject of a problem. In case of local search strategies almost all individuals in the population are modified. Methods that are hybrid of population based local search techniques and global search strategies are known as Memetic Algorithms (MA). The idea of MAs was established by PA Moscato[8]. MA is the name given to a category of stochastic global search strategies that are coalesced inside the frame of Evolutionary Algorithms (EAs). In these strategies, the global search

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competence of the basic strategy investigate the search space, In order to recognize the good number talented search space at the same time as the local search scrutinizes the environment of various preliminary solution.

To get better performance of DE this paper incorporates a local search strategy namely Levy Flight search with fitness based DE[7]. The proposed algorithm named as improved DE (iDE). The Levy Flight Search incorporated with various nature inspired algorithm like ABC [9],[10], Cuckoo Search[11]-[13], DE[14]-[16], PSO[17], bat algorithm[18] etc. Additional local search strategies improve exploitation capability of DE. Here in this newly proposed algorithm levy flight search used to decide step size for population update in addition to fitness based position update. The step size decided by combination of social learning component (SLC) and one another parameter s(t) decided by levy flight search. The step size (ss) decided by Eq.(4). In order to keep solution within boundary 0.001 multiplier used as this local search technique is very aggressive.

$$s(t) = 0.001 \times s(t) \times SLC \tag{4}$$

The large step size in solution update may leads to skip better solution and small step size leads to slow convergence. The Eq.(4) tries to maintain balance among two contradictory process, intensification and diversification. The proposed strategy modifies the Eq.(1) as shown in Eq.(5). This equation introduces a couple of parameters namely Scale_Factor and ss. First parameter decided by fitness of individual, it keeps

the best fitted solutions alive in next iteration. The second parameter (ss) decidedbyEq.(4).

$$v'_{i}(t) = x_{i1}(t) + (Scale_Factor) \times (x_{i2}(t) - x_{i3}(t))$$

$$+ (ss) \times (x_{i2}(t) - x_{i3}(t))$$
(5)

Both the newly introduced parameter improves the performance of DE as proved by experimental results.

IV. RESULTS

A. Test problems

Supiriority of newly proposed improved DE established by testing it for different types of problems $(f_1 \text{ to } f_{13})$ as shown in Table I [19],[20].

B. Experimental Setting

Performance of new variant of DE (iDE) measured with basic DE and its recent variant FBDE [7]. To perform experiment following setting adopted fo r iDE, DE and FBDE and performance averaged over hundred runs.

- Size of Population=50
- Limit = D*NP/2.
- The Scale factor F=0.5
- Maximum function evaluation=200000.
- Crossover probability CR=0.9.

TABLE I: Test Problems

Function Name	Objective Function	Search Range	Optimum Value
Griewank	$f_1(x) = \frac{1}{4000} \left(\sum_{i=1}^{D} (x_i^2) \right) - \left(\prod_{i=1}^{D} \cos \left(\frac{x_i}{\sqrt{f_i}} \right) \right) + 1$	[-600,600]	f(0)=0
Alpine	$f_2(x) = \sum_{i=1}^{n} x_i \sin x_i + 0.1x_i $	[-10,10]	f(0)=0
Michalewicz	$f_3(x) = -\sum_{i=1}^{D} \sin x_i \left(\sin(\frac{ix_i^2}{\pi})^{20} \right)$	[0,π]	fmin=-9.66015
Cosine Mixture	$f_4(x) = \sum_{i=1}^{D} x_i^2 - 0.1(\sum_{i=1}^{D} \cos(5\pi x_i)) + 0.1 \times D$	[-1,1]	f(0)=-D*0.1
Salomon Problem	$f_5(x) = 1 - \cos(2\pi\sqrt{\sum_{i=1}^{D} x_i^2}) + 0.1(\sqrt{\sum_{i=1}^{D} x_i^2})$	[-100,100]	f(0)=0
Step Function	$f_6(x) = \sum_{i=1}^{D} (x_i + 0.5)^2$	[-100,100]	f(-0.5≤x≤0.5)=0
Inverted Cosine wave function	$f_7(x) = -\sum_{i=1}^{D-1} (\exp(\frac{-(x_i^2 + x_{i+1}^2 + 0.5x_i x_{i+1})}{8}) \times I),$ $Where, I = \cos(4\sqrt{x_i^2 + x_{i+1}^2 + 0.5x_i x_{i+1}})$	[-5.5]	f(0)=-D+1

Levy montalvo-1	$f_8(x) = \frac{\pi}{D} (10\sin^2(\pi y_1) + \sum_{i=1}^{D-1} (y_i - 1)^2 (1 + 10\sin^2(\pi y_{i+1})) + (y_D - 1)^2), Where \ y_i = 1 + \frac{1}{4} (x_i + 1)$	[-10,10]	f(-1)=0
Colville function	$f_9(x) = 100(x_2 - x_1^2)^2 + (1 - x_1)^2 + 90(x_4 - x_3^2)^2 + (1 - x_3)^2 + 10.1[(x_2 - 1)^2 + (x_4 - 1)^2] + 19.8(x_2 - 1)(x_4 - 1)$	[-10,10]	f(1)=0
Braninss Function	$f_{10}(x) = a(x_2 - bx_1^2 + cx_1 - d)^2 + e(1 - f)\cos x_1 + e$	$x_1 \in [-5,10],$ $x_2 \in [0,15]$	f(-π,12.275)=0.3979
Shifted Rosenbrock	$f_{11}(x) = \sum_{i=1}^{D-1} (100(y_i^2 - y_{i+1})^2 + (y_i - 1)^2 + f_{bias}, y = x - o + 1,$ $x = [x_1, x_2, x_D], o = [o_1, o_2,o_D]$	[-100,100]	$f(o) = f_{bias} = 390$
Six-hump camel back	$f_{12}(x) = (4-2.1x_2^2 + \frac{1}{2}x_2^4 + x_1x_2 + (-4+4x_2^2)x_2^2$	[-5,5]	f(-0.0898,0.7126)=-1.0316
Hosaki Problem	$f_{13}(x) = (1 - 8x_1 + 7x_1^2 - \frac{7}{3}x_1^3 + \frac{1}{4}x_1^4)x_2^2 \exp(-x_2)$	$x_1 \in [0, 5],$ $x_2 \in [0, 6]$	-2.3458

TABLE II: Results for test problems

Test Function	Algorithm	MFV	SD	ME	AFE	SR
	DE	1.71E-03	5.00E-03	1.71E-03	55540	86
f_1	FBDE	1.02E-03	3.57E-03	1.02E-03	62828.77	91
	iDE	1.22E-03	3.68E-03	1.22E-03	73872.7	89
	DE	9.50E-06	4.48E-07	9.50E-06	61895.5	100
f_2	FBDE	8.83E-05	8.25E-05	8.83E-05	195954.6	17
	iDE	9.34E-06	5.19E-07	9.34E-06	115871.9	100
	DE	-9.62E+00	4.26E-02	4.21E-02	171411	20
f ₃	FBDE	-9.66E+00	7.17E-03	1.60E-03	68543.41	90
	iDE	-9.62E+00	5.41E-02	4.07E-02	180325.5	24
	DE	-2.99E+00	4.72E-02	1.33E-02	37386	92
64	FBDE	-3.00E+00	1.47E-02	1.49E-03	39758.1	99
	iDE	-2.99E+00	2.90E-02	5.92E-03	50078.25	96
	DE	9.22E-01	4.44E-02	9.22E-01	18053.5	100
f ₅	FBDE	2.08E-01	2.71E-02	2.08E-01	105881.2	92
	iDE	2.00E-01	7.64E-06	2.00E-01	98895.66	100
	DE	1.90E-01	6.28E-01	1.90E-01	39465	87
f ₆	FBDE	0.00E+00	0.00E+00	0.00E+00	22327.59	100
	iDE	3.70E-01	2.53E+00	3.70E-01	39949.71	92
	DE	-8.08E+00	6.55E-01	9.19E-01	171662	20
F ₇	FBDE	-8.98E+00	1.03E-01	2.10E-02	87427.31	96
	iDE	-8.89E+00	2.10E-01	1.13E-01	84636.78	97
	DE	1.05E-03	1.03E-02	1.05E-03	21505	99
8	FBDE	8.92E-06	9.03E-07	8.92E-06	30860.31	100
	iDE	9.06E-06	7.91E-07	9.06E-06	36245.53	100
f ₉	DE	8.65E-02	4.09E-01	8.65E-02	34035	85



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Test Function	Algorithm	MFV	SD	ME	AFE	SR
	FBDE	7.04E-04	6.00E-04	7.04E-04	9004.42	99
	iDE	4.29E-02	3.06E-01	4.29E-02	13557.11	97
	DE	3.98E-01	6.68E-06	6.12E-06	27718.5	87
f_{10}	FBDE	3.98E-01	3.21E-05	4.08E-05	1833.48	100
	iDE	3.98E-01	3.26E-05	3.78E-05	2741.01	100
	DE	3.92E+02	3.03E+00	2.42E+00	198143	1
f_{11}	FBDE	3.91E+02	1.54E+00	7.82E-01	185355.1	12
	iDE	3.93E+02	2.09E+00	2.93E+00	193770.2	4
	DE	-1.03E+00	1.52E-05	1.74E-05	106747.5	47
f_{12}	FBDE	-1.03E+00	1.49E-05	1.55E-05	109879.77	45
	iDE	-1.03E+00	1.47E-05	1.72E-05	105225.8	48
	DE	-2.35E+00	6.54E-06	5.79E-06	30786	85
f ₁₃	. FBDE	-2.35E+00	6.10E-06	5.51E-06	9051.91	96
	iDE	-2.35E+00	6.61E-06	5.94E-06	9008.64	98

C. Comparison of Results

Comparison of results done based on average number of function evaluations, rate of success, and standard deviation for each problem. In order to prove that improvements are by nature of modified algorithm not by chance, each problem solved 100 times and then average results are reported.

Table II compare results based on above said parameters and prove that iDE is out perform DE and FBDE both. Outcomes of Table II are reported in Table III. The iDE is better than DE and competitive to FBDE as shown by results. Table IV reports acceleration rate of iDE against DE and FBDE. Acceleration rate (AR) measured with the help of following formula.

$$AR = \frac{AFE_{ALGO}}{AFE_{iDE}}$$

Fig.1 shows comparison of results in terms of AFE with the help of boxplot [21]. It evaluates consolidated performance of iDE and shows that it is superior to the measured approaches as median and interquartile range are relatively low.

TABLE III: Summary of Outcomes of Table II

Function	iDE vs DE	iDE vs FBDE
fi	+	
f_2	-	+
f_3	+	-
f4	+	
fs	-	+
f_6	+	



Function	iDE vs DE	iDE vs FBDE
f_7	+	+
f_8	+	+
f ₉	+	-
f10	+	- 5 0
fii	+	-
f_{12}	+	+
f_{13}	+	+
Sumof+sign	11	6

TABLE IV: Acceleration Rate of iDE

TestProblem	DE	FBDE
f_1	0.751834	0.850501
f_2	0.534172	1.691131
f ₃	0.950564	0.380109
f4	0.746552	0.79392
f ₅	0.182551	1.070635
f_6	0.987867	0.558892
f ₇	2.02822	1.032971
f_8	0.593315	0.851424
f ₉	2.510491	0.664184
f_{10}	10.11251	0.668907
f_{II}	1.022567	0.956572
f_{12}	1.014461	1.044228
fis	3.417386	1.004803



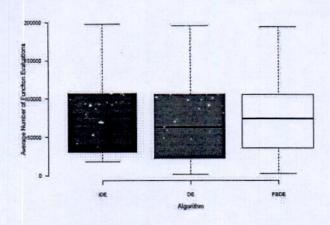


Fig. 1. Boxplots graphs for AFE

V. CONCLUSION

This paper, get better the exploitation capabilities of DE with the help of two new parameters. The iDE is better in terms of cliability, robustness and efficiency as proved with results. The improvements in iDE are due to addition of local search process that provide better exploitation capabilities and preserve apposite balance between intensification and diversification.

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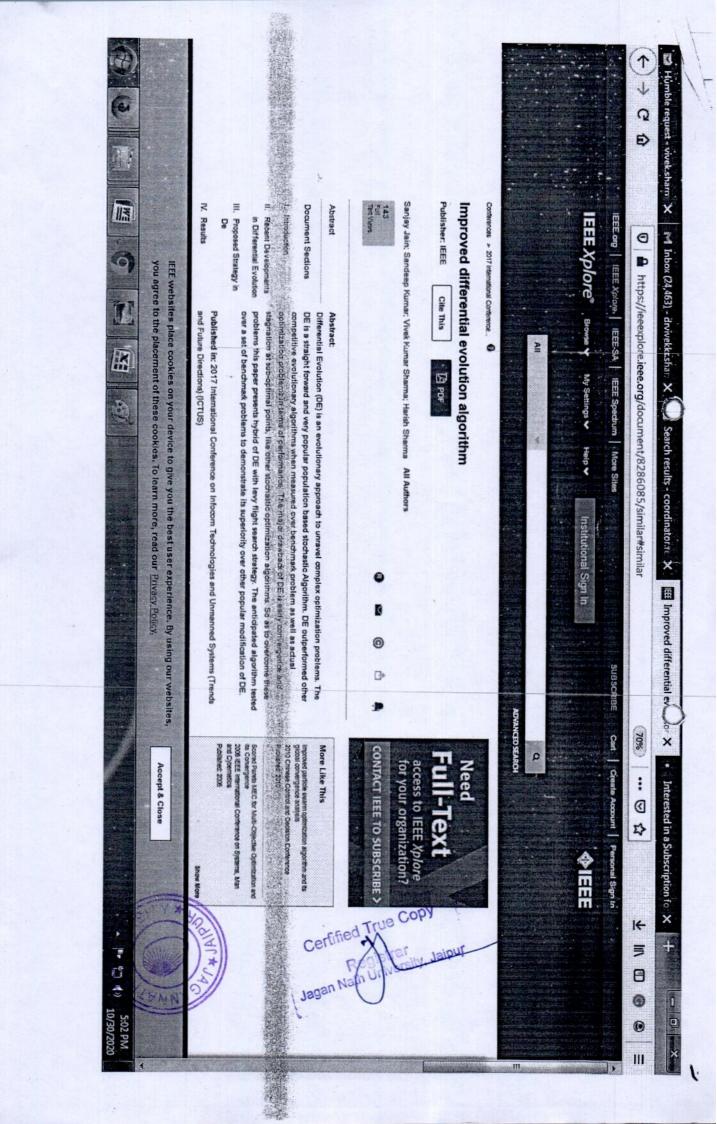
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Editors

Dr. Avnish Chauhan

Associate Professor
Phonics Group of Institutions
Roorkee (Uttarakhand)
(INDIA)

Dr. Sandeep Gupta

Assistant Professor

Department of Applied Science & Humanities

Ajay Kumar Garg Engineering College

Adhyatmik Nagar, Ghaziabad (UP)

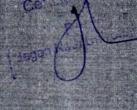
(INDIA)

Dr. Pawan Kumar 'Bharti'

Vice President
Society for Environment, Health, Awareness of
Nutrition & Toxicology (SEHAT)
1775, Sohan Ganj, Near Clock Tower

Delhi - 110 007 (INDIA)

E-mail: gurupawanbharti@gmail.co:n





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E-mail: discoverypublishinghouse@gmail.com

namitwasan9@gmail.com

sales@discoverypublishinggroup.com

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Fluoride - Harmful or Beneficial A Report on Fluoride in Rajasthan, India

Ranjeeta Soni

ABSTRACT

Huoridation is a very common problem all over India but in Rajasthan it is up to threat level because excess of fluoride is available in drinking water. Rajasthan all 32 districts are suffered from Fluorosis diseases but 18 districts are fluoride prone areas. Huoride is beneficial for health if the concentration of the fluoride ion (CF) in drinking water is less than 1.5 mg/L (WHO 1994). Various studies found many tinds of adverse effects of fluoride on human health. Fluoride when consumed in excess can cause several other kinds of manifestations like: dental, skeletal, and nonsteletal fluorosis. Dental fluorosis produces widespread brown stains on teeth and may cause pitting. Skeletal Fluorosis causes crippling and severe pain and stiffness of the backbone and joints (Bulusu and Nawlakhe, 1992). In non-skeltal fluorosis causes various disorders like: Neurological, Muscular, Allergic, Gastro-intestinal, and Urinary diseases. In For removal of excess of fluoride from drinking water many adsorbents are using from previous years but along with many demerits associated with these. But still we have not got perfect method.

Keywords: fluoride, drinking water, fluorosis, defluoridation, dental, skeletal, non-skeletal, health.

NTRODUCTION

Pluorine, the 13th most abundant element of the earth's crust, represents bout 0.3g/kg of earth's crust. Its molecular weight is 19 and atomic number is It occurs mainly in the form of chemical compounds such as: sodium fluoride

Department of Sciences, Jagannath University Chaksu, Jaipur, Rajasthan, India.



Global Business Strategies for Sustainability

J.K. Sharma L.K. Tyagi



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Contributors

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Internet of Things Based Wearable Health Solutions: Challenges in Adoption by Prospective Customers

Shweta Nanda* & Prof. (Dr.) Kapil Khattar**

Abstract

As with all major technology disruptions, competition will be ubiquitous, and success will depend on the ability to envision and roll out unique smart services. Traditional business models focuses on products than on services. The Internet of Things (IoT) is a network of physical devices and other items, embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data". In addition to cost containment, IoT also allows to keep up with constant innovation and shorter product lifecycles, gather real time data for augmented intelligence, and create end-to-end communication from wearable/implantable/ingestible diagnostic tools to treatment decisions to ICU monitoring to post-discharge care. While, IoT has given a blueprint to create value, we are still in nascent stages of effort to capture such value in health industry through wearable medical devices. It represents a scenario where a wearable product or "thing" is embedded with a sensor and is capable of communicating its state with other objects within an environment. Heath Industry challenge is to utilize the big data collected through a wearable medical device intended for use in the diagnosis of disease or other conditions or in the cure, mitigation, treatment or prevention of disease. The use of this wearable device will not only help to foster strong physician and patient relationships by exchanging real time physiological data but also reduce human intervention. This paper helps to identify the role of IoT in the potential wearable health industry with an objective to find out the consumer awareness challenges faced by wearable medical device innovators or startups.

Purpose: The purpose of this paper is to explore the available literature on medical wearable's devices from Industry, IoT India Congress Report, ASSOCHAM Report, Innovation Industries Conclaves, IEEE and various global researches. Also, it presents forth a strong foundation for researchers and startups to identify a suitable market offering for remote wearable health solutions.

Design/methodology/approach — Exploratory study has been conducted using different keywords to Draw a list of relevant research papers on Google Scholar and several online databases like Springer, IEEE, etc.

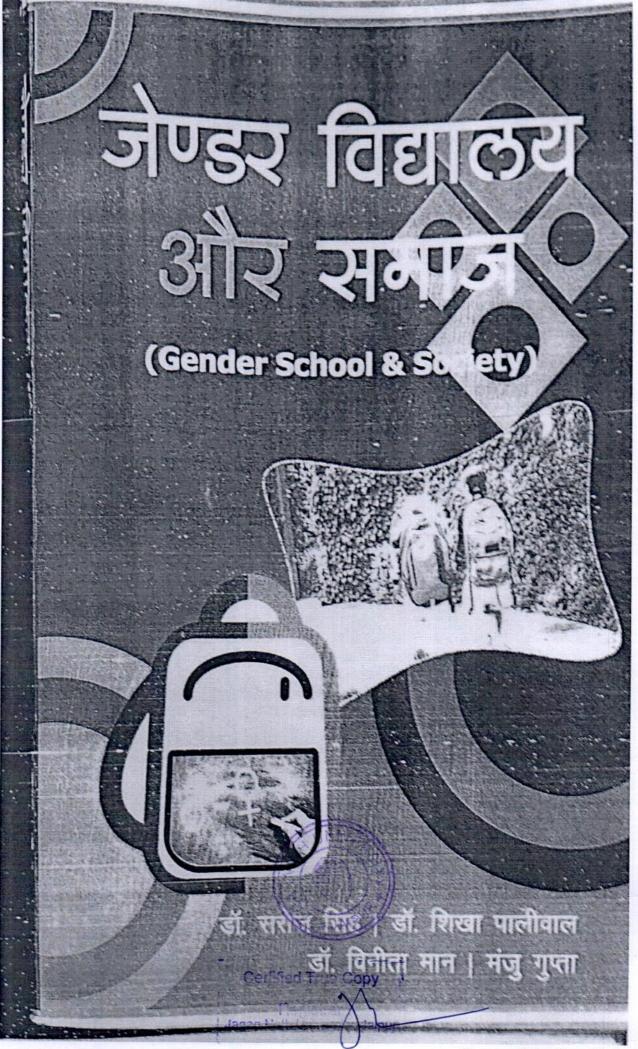
Findings – Various constructs and sub constructs have been captured from which dimensions of relevant market offering in remote connected care- WT segment has been explored.

Research Scholar & Assistant Professor, Technology and Operations, IILM, Delhi

Department of Management Studies, Jagannath University, Jaipur, Rajasthan

Jagan Nati

sity Jaipur



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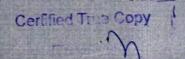
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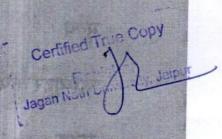


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STUDY ON EFFICIENT 24×7 WATER DISTRIBUTION SYSTEMS -A CASE STUDY

डॉ. सरोज सिंह

शिक्षा : वनस्थली विद्यापीठ डीम्ड यूनीवर्सिटी से एम.एस.सी., एम.एड. एवं पी.एच.डी.

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IVANETs (Internet Based Vehicular Adhoc Networks) are the adhoc networks formed by moving vehicles without any permanent infrastructure and are characterized by frequent disconnections, frequent topological changes, as vehicles move at very high speed and can take unpredictable turns on their route. So their cached data items become stale, need to be updated from the server and it results in high data traffic and long query delays. In such circumstances, data availability and data consistency becomes very crucial. Availability of consistent and updated data is one of the important requirements in VANETs. Cooperative caching concept is beneficial to reduce the query latency time as well as network traffic as vehicles can share their cached content and uplink connections to the server is reduced. In our paper we are proposing a cooperative caching scheme which is an improvement over existing 2Tier CoCS (2tier Cooperative Caching Scheme).

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E Contents

I. Introduction

IVANETs have emerged as an innovative area of research for many researchers and academicians in the past few years. In IVANETs vehicles establish communication link among themselves to share the information [1]. In IVANETs, Vehicles access Internet using IEEE 802.11 and each vehicle act as a MT (Mobile Terminal) which collects data from other vehicles in the retwork. Mobile devices use IEEE standards to Sign in to Continue Reading access Internet and they must have a unique ID so that recognised in network. Vehicles require some infrastructure to connect to the Internet. This infrastructure is provided by the RSUs (Road Side Units) in VANETs. The information exchange between vehicles for road safety is an application of Internet based Vehicular Ad Hoc Network (IVANET) and concept is known as Internet of Things (IoT) [2]-[4].

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consumption and size of cover text used for steganography. In these methods, one letter can hide maximum of eight bits which improves time overhead and memory overhead.

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E Contents

I. Introduction

Steganography is the practice of hiding a confidential message in another non-secret message such that it conceals communication [1]. The word Steganography comes from Greek terminology and that stands for "covered writing"[2]. The goal of Steganography is to hide a message inside other, media in a way that does not allow any third party to detect even the existe Sognointhe Continue i Batautingken place. It uses a cover message such as text, image, audio, video file format, etc. to hide a secret message [3]. The secret message embeds in the cover message by applying some mathematic logic. Text Steganography is a process to cover up the secret information within text (i.e. in character based) messages [4].

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E Contents

I. Introduction

Deputy Chief Engineer of Facebook, Mr. Jay Parikh once said, "you could only own a bunch of data other than Big Data if you do not utilize

the collected data" [1]. Big Data is distinguished by datasets of grand scale that cannot be adequately processed by conventional database systems and also, in addition, to scale there are other properties that can be used to identify Big Patato Big Patato Pitter across many environments, is still vague in meaning. The present available definitions of Big Data are being used to identify what are and what are not Big Data opportunities. Defining Big Data properly can make understand the current position of Big Data and identify its opportunities in different areas, and when and how it can be used by the various organizations in decision making.

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I. Introduction

Content based image retrieval has been an appealing research area for a very long while. CBIR index images based on the visual substance described by extort features such as shape, colors and texture features. Content based image retrieval is a competent way to look around, retrieve and access similar kind of images from the database [15]-[16], [14], [20], [8]. The huge progression in developing innovation rouses the Content Based Image Retrieval scientists to think of new thoughts for picture recovery in view of substance so that today's client desires can be satisfied [10]. Conventional image retrieval systems depend on the attribute of the first information for example, 1e name, keywords, note title and ordering symbol. When concern to large dataset these attributes get to be time consuming and also not able to depict image contents [12]. Two unique sort of methodologies i.e content and texture based are normally embraced in image retrieval. In the content based framework the pictures are physically commented on by content descriptors and after that utilized by a database administration framework to perform image recovery. Texture supported image retrieval system which mingle the wavelet decomposition and gradient vector was proposed by Huang and Dai [9]. The content based image retrieval techniques was used to resolve the crisis of the annotated based image retrieval methods. In it images are routinely indexed by extracting primitive attributes such as shape, texture and color. Block Truncation coding was introduced by Mitchell and delp in 1979 [2]. In this algorithm image is divided into blocks and is replaced by low and high mean. The compression ratio is the main factor over here. When we increase the ratio, the image quality decreases. Several methods are developed for the improvement of the compression ratio as well as the quality of an image.

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E Contents

I. Introduction

In the current era, data is being produced at a very fast pace and resulting into a huge mass of data that is referred to as Big Data. Big

data exhibits diverse features such as large volume, diverse variety, highly varying, multivalued, varying swiftness and huge convolution [1], making it is difficult to examine the data and obtain the required information with customary data in more little and obtain the required information or to find out unseen relationship between the data is viewed as Data mining. There are different stages that data mining technology has come across, [2] which assistances the business organizations to nurture their business figures or aiding them in decision making.

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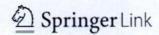
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Trends and Pattern Analysis in Social Networks

Hybrid Intelligence for Social Networks pp 269-298 | Cite as

- Meenu Chopra (1) Email author (meenu.mehta.20@gmail.com)
- · Mamta Madan (1)
- · Meenu Dave (2)
- Cosmena Mahapatra (1)
- 1. Vivekananda Institute of Professional Studies, , New Delhi, India
- 2. Jagannath University, , Jaipur, India

Chapter

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Abstract

The focus in India has now changed to providing world class higher education to all students aiming to compete with the world. Keeping this in mind, higher education institutions (HEIs) must figure out a way to make the change in accordance with technological advancements in social networking to motivate students and encourage an intuitive learning environment in their campus. Using social networking in higher education (HE) is being creative, productive, cost-effective, and is exceptionally critical owing to the complex nature of serving the population of the online generation (Og). Utilizing the social networking environment for learning and teaching at HEIs could be a financially effective and productive way of speaking to and connecting with higher education online members, which include students, faculties, administrators, staff, management, etc. A few illustrations of the HEI becoming a "Social Institution" are strengthening the HEI's "brand" or reputation, managing and building online communities (staff, students, parents/guardians, graduated class/alumni), and streamlining processes for better productivity at less expense. This chapter focuses on effective implementation of data analytics techniques on social media datasets for helping Indian HEIs to compete effectively in the global market.

Keywords

Higher education (HE) Higher education institutions (HEIs) Higher education professionals (HEPs) Online generation (Og) Certified True Copy

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Online social networking (OSN) Social networking sites (SNS) This is a preview of subscription content, <u>log in</u> to check access.

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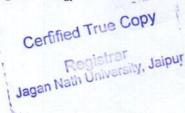
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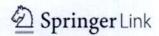
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Opinion Dynamics Through Natural Phenomenon of Grain Growth and Population Migration

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- Puja Munjal (1) Email author (puja.munjal@gmail.com)
- · Sandeep Kumar (2)
- · Lalit Kumar (3)
- · Aashish Banati (4)
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- 2. Jagannath University, , Jaipur, India
- 3. Department of Physics, Hindu College, University of Delhi, , Delhi, India
- Scientist 'F', STQC DTE, Ministry of Electronics and Information Technology, Delhi,
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Abstract

Opinion dynamics has witnessed a colossal interest in research and development activity aimed at the realization of intelligent systems facilitating the understanding and prediction of these. Many nature-inspired phenomena have been used for modelling and investigation of opinion formation. One of the prominent models based on the concept of ferromagnetism is the Ising model in statistical mechanics. The model represents magnetic dipole moments of atomic spins, which can exist in any one of two states, +1 or -1. We have used NetLogo to simulate the Ising model and correlated the results with opinion dynamics within its purview. For the first time, the grain growth phenomenon has been investigated to analyze opinion dynamics. We have also modelled natural phenomena of population growth using rigorous mathematics and corroborated the results with opinion dynamics. The results substantiate the potential use of such nature-inspired phenomena that encompass an ensemble large enough to be investigated and correlated with the real world, in terms of the involvement of numerous actors/agents participating in the process of opinion formation.

Keywords



Grain growth Ising model Nature-inspired algorithms Net Logo Opinion dynamics Population model

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