## SOFT COMPUTING

Camlin Page
Date 17 Oct 12020.

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- E	1) What is computing?
(An	The discipline of computing is the systematic study of algorithmic processes that describe & transform information: Their theory, analysis, design, efficiency, implementation & application. There are two types of computing - 8 Hard Computing & Soft Computing.
	analysis, design efficiency implementation & application. There are
	two types of computing - 8 Hard Computing & Soft Computing.
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<u> </u>	2) What is soft computing?
An	) Soft Computing is the use of approximate calculations to provide
_ <del></del>	imprecise but usable sol to complex computational problems. The
	approach enables sol for problems that may be either unsolvable or just too time-consuming to solve with overent hardware: Soft
	Great too lime consuming to solve with surrent nordward: sige
li al	Gomputing is semetimes referred to as computational intelligence.  At provides on approach to problem solving using mains other
	It provides on approach to problem solving using mains other than computers. With the human mind as a role model, soft
1	computing is tolereant of fartial brills, uncertainly imprecision
	and affroximation, unlike traditional computing midels.
8	3) What is hard computing?
	The state of the s
(Am	Hard Computing ie, conventional computing, requires a precisely stated analytical model and often a lot of computation line.
	1/2 and the modelle against the school source to the and
	problems exist in a non-ideal invoconment. The premises
	problems exist in a non-ideal involvemment. The premises and guiding principles of hard computing are precision; certainty and rigor.
	and rigor.
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<u>\$</u> 9/0	Compare Blo soft and hard computing.
(Hrs.)	Soft Computing Hord Computing
3	The second of th
<u>i)</u>	Deals with assumptions i) Deals with precise values
<i>ùi</i> )	Accuracy is not necessary (i) Accurate sutput is needed
iii)	Usafat for routine, control, iii) Useful in critical septems.
	alasign making lasks.
Ju)	Its a liberal of inexactness, iv) Needs an exactly stated
7.00	uncertainty, portial and approximation analytical model.
	Relies on formal logic and i) Relies on binary logic and probabilistic reasoning. exist system
	probabilistit reasoning.  Stochastic in nature.  vi) Deterministic in nature.
	Works on ambiguous & noicy data wir Works on exact data.
~	Can perform parallel computations viii) Performs sequential computations
	Produces approximate results. in Broduces precise reseals.
x)	Emerges its own program 21) Requires programs to be availted.
<u> </u>	Incorporates randomness où) Is settled
201)	Uses multivalued logic xii) Uses tars-valued logic.
DE D	Ot the to in al CIF Con To
<u> </u>	Define the premises of Soft Computing
(Aus)	Bremises of soft computing
1 1 25	The good froud arabbins are horizonically supprocio
1 20 00	encertain in nature. And the conventional approach banks on precisely stated analytical models and are mostly valid
is a	on precisely stated analytical models and are mostly valid
	got state distance or the
	3) Brassion & certainly carry a cost.
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	Camlin Page
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86%	Define the principles of soft computing.
(4.)	The Basic Banable of not combuling is to analait the tolorance
(Ans)	The Basic prohible of soft computing is to exploit the tolerance for imprecision, uncertainty portial truth and approximation to achieve tradability, robustness and low solution cost.
5	achieve tradability, robustness and low solution cost.
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1	tricking it will apolity of it while the
- /	in the makes of metal the telephone of Astronomia
J. = 10	To find & from the branches of the standard of
14	the state of the s
870	What are the implications of soft competing?
(Ans.)	Soft Computing employs Newal Networks, Fuzzy logic, etc. in a complenantaxe rather than a competitive way. One example of
15	complementary rather than a competitive way. One example of
	a particularity effective combination is what has come to be
104- 4	a particularly effective combination is what has come to be known as "neurofizzy systems," which is a culmination of neural network and fuzzy systems. Such lend of systems are
Y	neural network and fuzzy systems. Such kind of systems are
	neural network and fuzzy systems. Such kind of speems are becoming increasingly visible as consumer products ranging from air conditioners and washing machines to photocopiers and camediders are all using them, along with many more industrial applications.
20	air conditioners and washing machines to photocopiers and
4 / 1	Camediders are all using them, along with many more
	industrial applications.
	1/01/14/201/05
8/8/0	What are the unique properties of soft competing?
25	the est which the advantage of the state of
(Amr)	i) devening from emperimental data
\$ 0	ii) Soft compelling techniques derive their power of generalization
1. (	from approximating or interpolating to produce outputs from
	Soft computing techniques derive their power of generalization from approximating or interpolating to produce outputs from proviously mouts previously most previously mouts by using outputs from proviously mouts in Generalization is sesually done in a high dimensional foce
30	iii) Gentralization is susually done in a high almoustonal space

	Camlin Page  Date	
agh	D. 11 11: A date of Catt Contino	1
8.10	Bustly define 4 techniques of Soft Computing.	
(Am)	The 4 techniques of Soft Computing are:	
	i) NEURAL NETWORK:	and.
,	A Newal Network is a system composed of many of processing elements operating parallely, whose Junction is	- Company
	determined by network structure and connection strengths.	L
10	or nodes. The knowledge is acquired by the network	U.
· 1.	There ich a leagning bycass that the interneutor country	MAN
-	strengths, known as synaptic weights, are used to store in this knowledge. This mining brain mechanisms to smulate be	chairm
15	3) SUPPORT VECTOR MACHINE (SVM):	
	SVM is a classifier derived from statistical learning thes It is a learning machine that uses date to find the	8
	approximating function (in regression problems) or the separation boundary (in classification or fatter recognition in high dimensional situations.	will)
20	in high dimensional situations.	Proposition of
	iii) GENETIC ALGORITHM:	
3	Genetic Algorithm is a search heuristic that is inspired	
25	Charles Darwin's sheary of natural evolution. This algo ref the process of natural selection where the fittest individu	iels-
To harden	are related for reproduction in order to produce offspring	2
They wis	of the resit generation. It is particularly well swited of hard problems where little interior about the	13.11
1 200 mg/ 100 30 C	enderlying search space:	

	Camlin Page
• )	FUZZY LOGIC:
iv)_	Fuzzy logic is are approach to computing based on degrees of
	touth " rather than the usual true (1) or take (0) Boolean
5	lovic on which the motion in buter in hard It is amplaced
	to handle the concept of partial buth, where the buth
	to handle the concept of partial buth, where the truth value may range b/w completely true and completely false.
810/0	Mantion the importance of soft computing.
75	
(Ans.)	i) It emploits the tolerance of imprecision, approximation and
	unicitarity to advene reputires and low cost solution.
	Infact the role model of soft computing is the human mind.
	competitive. It is essentially a paranership among different
15	Latingues in which each of the partners contribute a distinct
	methodology for addressing problems in its domain.
	iii) In both consumer products and industrial systems, she
	enflorment of selt computing techniques leads to systems which have high Machine Intelligent Quotient (MID).
23	which have high Mothere Intelligent Quotient (MIQ).
0.1	
8110	What we the different applications of soft computing?
(Am)	The applications of soft computing are in different fields:
8	i) Business:
	-> Customer Targeting
	-> Sequenting
	-> Schiduling
30	-> Fuzzy Stata analysis
	>Optimizing R&D projects.
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	ii) tinance:		
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	iii) Engineering :	Phillips Au	
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