MAJOR PROJECT REPORT

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Submitted in partial fulfillment of the requirements for the degree of
Bachelor of Technology in Electronics & Comm. Engineering

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December 2016

CERTIFICATE

We hereby declare that the work which is being presented in the report entitled LaTeX Template Title Here by our team in partial fulfillment of requirements for the award of degree of Bachelor of Technology submitted in the Department of Electronics & Comm. Engineering at SBSCET Ferozepur is an authentic record of our own work under the supervision of Main-Guide-Name & Co-Guide-Name. The matter presented in this report has not been submitted by us in any other University / Institute for the award of Degree / Diploma.

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The Viva-Voce Examination is held at Department of Electronics & Comm. Engineering, SBS College of Engg. & Tech., Ferozepur on .....

Signature of the EXTERNAL EXAMINER

Signature of the HEAD,
Department of Electronics & Comm. Engineering

ABSTRACT

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Place: Ferozepur Satvir Singh

Date: December 8, 2016

ABBREVIATIONS

Abbreviations	Description
ACO	Ant Colony Optimization
AI	Artificial Intelligence
BBO	Biogeographical Based Optimization
CCA	Continuous Curved Approximation
CUDA	Compute Unified Device Architecture
EA	Evolutionary Algorithm
EC	Evolutionary Computation
FL	Fuzzy Logic
FLC	Fuzzy Logic Controller
FLS	Fuzzy Logic System
FLT	Fuzzy Logic Toolbox
FOU	Footprint of Uncertainty
FPAA	Field Programmable Analog Array
FPGA	Field Programmable Gate Array
FS	Fuzzy Set
GA	Genetic Algorithm
gbest	Global Best

Abbreviations	Description
GC	Generalized Centroid
GFS	Generalized Fuzzy System
GPU	Graphical Processing Unit
GUI	Graphical User Interface
hbest	Hybrid Best
HSI	Habitat Suitability Index
IT2	Interval Type-2
IT2 FLS	Interval Type-2 Fuzzy Logic System
IT2 FS	Interval Type-2 Fuzzy Set
IVFS	Interval-Valued Fuzzy Set
KM	Karnik-Mendel
lbest	Local Best
LMF	Lower Membership Function
LPA	Linear Path Approximation
LUT	Look-Up Table
MF	Membership Function
NI	Nature Inspired
NP	Nonlinear and Polynomial
Op-Amp	Operational Amplifier
pbest	Previous Best
PSO	Particle Swarm Optimization
SI	Swarm Intelligence
SNR	Signal-to-Noise Ratio
T1	Type-1
T1 FLS	Type-1 Fuzzy Logic System
T1 FS	Type-1 Fuzzy Set
T2	Type-2
T2 FLS	Type-2 Fuzzy Logic System

NOTATIONS

Symbols	Description
p_g	Best particle in overall swarm
p_l	Best particle in the local swarm
p_i	Best position of ith particle visited in past
φ_1	Cognitive acceleration parameter
$\overline{A}$	Complement of T1 FS (A)
χ	Constriction factor
A_e	Embedded T1 FS of $\tilde{A}$
$\tilde{A}_e$	Embedded T2 or IT2 FS of $\tilde{A}$
$\vee$	Fuzzy t-conorm (union) operator
$\bigstar$	Fuzzy t-norm (general) operator
$\wedge$	Fuzzy t-norm (minimum) operator
$\int$	Fuzzy union over continuous universe of discourse
$\sum$	Fuzzy union over discrete universe of discourse
w	Inertia weight
$\underline{\mu}_{\tilde{A}}(x)$	LMF of T2 or IT2 FS ($\tilde{A}$)
V_{max}	Maximum particle velocity
$\mu_A(x)$	MF for T1 FS (A)

Symbols	Description
$\mu_{\tilde{A}}(x)$	MF of T2 or IT2 FS ($\tilde{A}$)
x_i	Present position of ith particle in PSO or ith input to an FLS
v_i	Present velocity of ith particle
J_x	Primary membership grade over $x \in X$
φ_2	Social acceleration parameter
$\cup$	T1 fuzzy t-conorm (union) operator
$\cap$	T1 fuzzy t-norm (intersection) operator
$\tilde{A}$	T2 FS (A)
$\sqcup$	T2 fuzzy t-conorm (join) operator
$\sqcap$	T2 fuzzy t-norm (meet) operator
$\neg\tilde{A}$	T2 fuzzy negation operation of $\tilde{A}$
/	Tuple
$\overline{\mu}_{\tilde{A}}(x)$	UMF of T2 or IT2 FS ($\tilde{A}$)
X	Universe of discourse of x

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