INVITED SESSION CALL FOR PAPERS
ACODS-2014 INVITED SESSION ON
Type-II Fuzzy Set and Its Application in Modeling Control, Optimization and Uncertainty in Dynamical Systems

http://www.iitk.ac.in/acods2014/Home_ACODS-2014.html

Invited Session Chair

Dr. D. Datta

Health Physics Division, BARC, Mumbai, India

Email:
ddatta@barc.gov.in

Invited Session Co-chair

Dr. Samarjit Kar

Professor,
Dept. of Mathematics,
NIT Durgapur, W.B.
India

Email:
kar_s_k@yahoo.com

Background: Dynamical systems need optimization for its better performance with safety of unusual occurrences. System's best performance is attributed by the degree of belief and plausibility because probability is always contained within these two fuzzy measures. Belief, plausibility and probability measures can be formulated on interval-valued type II fuzzy sets with their representation in terms of α-level (crisp) sets. Uncertainty of a system can be quantified by type I fuzzy set theory, but uncertainty of uncertainty which is very important for an imprecise system, cannot be modeled by type I fuzzy set theory. The reason is simple, in the sense that, information of an imprecise system may come in general from various resources and therefore it needs an aggregation technique. Aggregation technique is not valid in case of type I fuzzy systems. The papers that will be presented in this session will focus on the fundamentals of type II fuzzy sets, algorithms for handling type II fuzzy set based systems, techniques for ordering the type II fuzzy systems (ranking), framing of logic and construction of rules to explore the applications of type II fuzzy systems on control (robotics) and optimization, dynamic systems governing by partial differential non-linear differential equations and computation of belief, plausibility using type II fuzzy sets to address the issue of uncertainty of uncertainty.

In view of the above potential of type II fuzzy systems, the invited session will cover the various applications on fuzzy control, fuzzy automata, fuzzy optimization, fuzzy entropy and fuzzy TOPSIS using type II fuzzy set. A wide variety of problems in the field of engineering and science will be addressed.

Topics : Potential topics of this invited session include, but are not limited to:

- Algebra and topology of Type II fuzzy sets
- Quantification of square of Uncertainty in solution of imprecise based non linear partial differential equations
- Quantification of type II fuzzy membership and defizzification techniques
- Type II fuzzy rule based systems
- Computational techniques of type II fuzzy automata
- Computational techniques of belief, probability, plausibility and uncertainty
- Type II fuzzy MARKOV systems
- Type II fuzzy logic and its applications
- Type II fuzzy logic and Approximate Reasoning
- Quantification of solution of imprecise based non linear ODE and PDE

- Modelling and control of dynamical systems through type II fuzzy controller
- Type II fuzzy stochastic systems

Important Dates :
31st October 2013: Deadline for submission of full-length papers
15th December 2013: Acceptance/rejection notification
15th January 2013: Final camera-ready papers due in electronic form.
Papers for the Invited Session should be submitted through **papercept**. Please visit the conference website for more information.