Developments in Fuzzy Sets,
Intuitionistic Fuzzy Sets,
Generalized Nets and Related Topics.
Volume I: Foundations

New Developments in Fuzzy Sets, Intuitionistic Fuzzy Sets, Generalized Nets and Related Topics Volume I: Foundations

Editors

Krassimir T. Atanassov
Michał Baczyński
Józef Drewniak
Janusz Kacprzyk
Maciej Krawczak
Eulalia Szmidt
Maciej Wygralak
Sławomir Zadrożny

Editors
Krassimir T. Atanassov
Michał Baczyński
Józef Drewniak
Janusz Kacprzyk
Maciej Krawczak
Eulalia Szmidt
Maciej Wygralak
Sławomir Zadrożny

SRI PAS IBS PAN

New Developments in Fuzzy Sets, Intuitionistic Fuzzy Sets, Generalized Nets and Related Topics
Volume I: Foundations

Systems Research Institute
Polish Academy of Sciences

New Developments in Fuzzy Sets, Intuitionistic Fuzzy Sets, Generalized Nets and Related Topics
Volume I: Foundations

Editors

Krassimir T. Atanassov
Michał Baczyński
Józef Drewniak
Janusz Kacprzyk
Maciej Krawczak
Eulalia Szmidt
Maciej Wygralak
Sławomir Zadrożny

IBS PAN **SRI PAS**

© **Copyright by Systems Research Institute**
Polish Academy of Sciences
Warsaw 2012

All rights reserved. No part of this publication may be reproduced, stored in retrieval system or transmitted in any form, or by any means, electronic, mechanical, photocopying, recording or otherwise, without permission in writing from publisher.

Systems Research Institute
Polish Academy of Sciences
Newelska 6, 01-447 Warsaw, Poland
www.ibspan.waw.pl

ISBN 83-894-7540-5

Dedicated to Professor Beloslav Riečan on his 75th anniversary

Contents

Foreword IX

On a new approach towards defining intuitionistic fuzzy subtractions..... 1
K. Atanassov

A new intuitionistic fuzzy implication. Part 2..... 35
L. Atanassova

Fuzzy logical connectives in approximate reasoning. Dual operations..... 41
J. Drewniak

Decision making problem on intuitionistic fuzzy relations..... 61
P. Drygaś and B. Pękala

Transformations of intuitionistic fuzzy relations..... 71
U. Dudziak

Conditional probability on the family of IF-events with product..... 93
R. Hanesová

Computation of the measures of dependence for imprecise data..... 99
O. Hryniewicz and K. Opara

Systems of intuitionistic fuzzy equations..... 113
Z. Matusiewicz

Feature selection based on the AIC helpfulness criterion..... 129
M. Ostrycharz and P. Grzegorzewski

A note on bijective correspondence between intuitionistic fuzzy sets and intuitionistic fuzzy sets of p-th type..... 143
P. Rangasamy, P. Vassilev and K. Atanassov

On a story inspired by IF-sets..... 149
B. Riečan

A convergence theorem on effect algebras 157
B. Riečan and L. Lašová

Generalized net of a genetic algorithm with intuitionistic fuzzy selection operator 167
O. Roeva, T. Pencheva and K. Atanassov

Generalized net model for parallel optimization of multilayer perceptron with conjugate gradient backpropagation algorithm 179
S. Sotirov and M. Krawczak

A method of construction of intuitionistic fuzzy tolerances based on a similarity measure between intuitionistic fuzzy sets 191
D. A. Viattchenin

The papers presented in this Volume 1 constitute a collection of contributions, both of a foundational and applied type, by both well-known experts and young researchers in various fields of broadly perceived intelligent systems.
It may be viewed as a result of fruitful discussions held during the Tenth International Workshop on Intuitionistic Fuzzy Sets and Generalized Nets (IWIFSGN-2011) organized in Warsaw on September 30, 2011 by the Systems Research Institute, Polish Academy of Sciences, in Warsaw, Poland, Institute of Biophysics and Biomedical Engineering, Bulgarian Academy of Sciences in Sofia, Bulgaria, and WIT - Warsaw School of Information Technology in Warsaw, Poland, and co-organized by: the Matej Bel University, Banska Bystrica, Slovakia, Universidad Publica de Navarra, Pamplona, Spain, Universidade de Tras-Os-Montes e Alto Douro, Vila Real, Portugal, and the University of Westminster, Harrow, UK:

Http://www.ibspan.waw.pl/ifs2011

The consecutive International Workshops on Intuitionistic Fuzzy Sets and Generalized Nets (IWIFSGNs) have been meant to provide a forum for the presentation of new results and for scientific discussion on new developments in foundations and applications of intuitionistic fuzzy sets and generalized nets pioneered by Professor Krassimir T. Atanassov. Other topics related to broadly perceived representation and processing of uncertain and imprecise information and intelligent systems have also been included. The Tenth International Workshop on Intuitionistic Fuzzy Sets and Generalized Nets (IWIFSGN-2011) is a continuation of this undertaking, and provides many new ideas and results in the areas concerned.

We hope that a collection of main contributions presented at the Workshop, completed with many papers by leading experts who have not been able to participate, will provide a source of much needed information on recent trends in the topics considered.

ISBN-13 9788389475404
ISBN 838947540-5