



A Special Session on

A Special Session on Fuzzy Applications in Wireless Sensor Networks

organized by Kasım Murat Karakaya

Recent technological advances in Communication Information Systems (CIS) and especially in MEMS (Micro Electro-Mechanical Systems) have made the production and deployment of tiny, battery-powered nodes (units) which communicate over wireless links possible. A Wireless Sensor Network (WSN) is comprised of such units at varying numbers, where each single unit is connected to one or generally several units. An early deployment aim is to use these sensors in a passive way for indoor applications. These kinds of early nodes had the ability to sense scalar data such as temperature, humidity, pressure, and location of surrounding objects. However, recently available sensor nodes have higher computation capability, higher storage space, and better power solutions with respect to their predecessors and their primary usage area has shifted from indoor to outdoor applications. With these advances, it is nowadays possible to see a sensor network deployed for daily activities such as environmental monitoring, healthcare monitoring, and security systems.

There are abundant situations where one can meet uncertainty in data in the wireless sensor network context. These situations can be shortly stated as node deployment, node clustering, data classification, optimization problems, and so on. The existing uncertainty in data may either result from the use of linguistic variables for data modeling, or may be the result of insufficient or untrusted data. Fuzzy sets and logic enable us to efficiently and flexibly handle uncertainties occurring in this sense. Moreover, the use of fuzzy logic in WSNs bridges the gap between simulations and real-world implementations the simulations are targeting.

Objectives and topics:

This special session aims to offer a systematic overview of fuzzy data processing techniques and provides innovative approaches to handle various uncertainty issues in data processing and analysis in wireless sensor networks by applying fuzzy sets, fuzzy logic, fuzzy systems and other computationally intelligent techniques.

We invite interested authors to submit their original and unpublished work to this special session. The main topics of this special session include, but are not limited to, the following:

- Fuzzy node clustering in wireless sensor networks,
- Fuzzy data classification in wireless sensor networks,
- Data uncertainty handling in wireless sensor networks,
- Tools and techniques for fuzzy data modeling in WNSs,
- Application of Genetic Fuzzy Systems for wireless sensor networks,
- Applying fuzzy logic for decision-making on WSNs,
- Fuzzy event detection in WSNs,
- Energy efficient fuzzy logic-based Intelligent WSNs,
- Uncertain issues in WSNs,
- Fuzzy decision-making in wireless sensor networks.

Short biography of the organizer(s) and contact information:

Asst.Prof. Dr. K. Murat Karakaya (Computer Engineering Dept., Atılım University)

Dr. Murat KARAKAYA received the B.S.E.E. degree in 1991 from the Turkish Military Academy (KHO), Ankara, Turkey, and the M.S. and Ph. D. degrees in Computer Engineering from the Bilkent University, Ankara, Turkey in 2000 and 2008, respectively. From 1992 to 2000, he worked as an engineer at different units in the Turkish Land Forces (KKK), Ankara, Turkey. From 2000 to 2005, he worked as an instructor and software engineer at the Turkish Military Academy (KHO), Ankara, Turkey. Then, during 2005-2008 he worked as IT Project Manager in the North Atlantic Treaty Organization (NATO) Brussels, Belgium. From 2008 to 2012, he worked as an instructor and software engineer at the Turkish Military School of Electronics, Communications and Information Systems (MEBS) and Turkish Military Academy (KHO), Ankara, Turkey. He joined the faculty of Atılım University in 2012 and is currently an Asstant Professor in the department of Computer Engineering, Ankara, Turkey. His research interests are natural computing methods and applications, sensor networks, peer-to-peer networks, and communications protocol design. He is currently an Editorial Board Member of the Journal of Telecommunications System & Management, a Scientific Committee Member of the International Symposium on Engineering, Artificial Intelligence and Applications (ISEAIA), an Organizing Committee Member of the International Conference and Business Expo on Wireless Communication, and a Technical Committee Member of the International Conference on Computer and Software Modeling. He has authored over 25 publications in international and national scientific Journals, book chapters and peer-reviewed conferences.

Muhsin CİVELEK (Computer Engineering Dept., Turkish Military Academy)
(Short Bio Provided)

Muhsin Civelek is a lecturer and head of computer engineering department in Turkish Military Academy. His Phd. topic is Automated object classification in WMSN (Wireless Multimedia Sensor Network). He also participated in Fuzzy Object Oriented Multimedia Database Project which is administrated by Prof.Dr. Adnan YAZICI.

Seyyit Alper SERT (Computer Engineering Dept., Middle East Technical University)

Seyyit Alper SERT received the B.S.E.E. degree in 2004 from the Turkish Military Academy, Ankara, Turkey, and the M.S. degree in Computer Engineering from the Middle East Technical University, Ankara, Turkey in 2014. Starting from 2004, he has worked as an engineer at different units in the Turkish Land Forces Command, Ankara, Turkey. His PhD topic is the Design and Implementation of a Fuzzy Fusion-based framework for Surveillance Applications in WMSNs. Currently, he works as an engineer in the Turkish Land Forces command and also a part-time lecturer in the department of Computer Engineering, Middle East Technical University.

Organizers Contact Information

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Important Dates

- Paper submission
February 8, 2015
- Notification of acceptance for papers
March 23, 2015
- Camera-ready paper submission
April 21, 2015
- Early registration deadline
April 23, 2015
- Conference
August 2-5, 2015

Submission of the papers

Please submit your papers for this special session to both the organizers and conference online submission system (<http://fuzziieee2015.org/>) by indicating the title of the special session.