



Participant Profile

for the
Turkish-German Strategy Workshop 2006
TÜBİTAK Marmara Research Center
Gebze, Turkey
13 – 15 December 2006



International Bureau (IB)
of the Federal Ministry of
Education and Research
(BMBF)

1. Contact details and personal information

Name:	Mehmet Keskinöz	Phone:	216-4839539
Role/function¹:	working group leader	Fax:	216-4839550
Institution:	Sabanci University	E-Mail:	keskinöz@sabanciuniv.edu
Department:	Electronics Engineering	Website:	http://people.sabanciuniv.edu/ keskinöz/
Address:	Orhanlı, Tuzla	Organisation type²:	University
Postcode and City:	34956, Istanbul		

¹ **Role/function** e.g. working group leader, managing director, postdoc, PhD etc.

² **Organisation type** e.g. university, research institution, small and medium enterprise (SME), industry etc.

Working Group:	<input type="checkbox"/> 1 Material Technologies <input type="checkbox"/> 2 Biotechnology, Genomics and Food <input type="checkbox"/> 3 Energy <input checked="" type="checkbox"/> 4 Information and Communication Technologies <input type="checkbox"/> 5 Environmental Protection, Climate Change and Sustainable Development
Areas of activity:	<input checked="" type="checkbox"/> research <input checked="" type="checkbox"/> technology development <input type="checkbox"/> demonstration <input type="checkbox"/> training <input type="checkbox"/> dissemination <input type="checkbox"/> other:
Keywords characterising your area of research:	Please choose the appropriate key words (max. 5) from the following list: http://www.cordis.lu/fp6/keywords Communication engineering, signal processing
Expertise, technologies and infrastructures available in your institution:	Research activities / expertise: Embedded systems and sensor technologies , • Mobile and wireless communication technologies, Intelligent systems and process engineering Methods: system simulations and demonstrations Key technologies: sensor and mesh networks, multi-band-ofdm UWB Infrastructures: workstations, TI DSP boards Key publications: "Proportional Time Sharing with Frame Size Adaptation for MB-OFDM based UWB WPANs", IEEE LISAT , 2006, Keskinöz," Iterative Soft- MMSE Equalization for Digital Non-Linear Page-Oriented Memories," Applied Optics, 2006.



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2. Past and present research collaborations

Are you familiar with the European Framework Programme?

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<input type="checkbox"/> with Framework Programme 5 <input type="checkbox"/> with Framework Programme 6 <input type="checkbox"/> with Framework Programme 7	

EU-projects you are involved in:

Past projects	Programme title / contract number / title / acronym / your function (coordinator / partner / contractor)
Present projects	

Other international collaborations:

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Name(s) and contact details of potential partners:

	If you would like to suggest the participation of particular partners from the partner country based on existing contacts or collaboration experience, you are welcome to indicate their names and contact details below:

3. Presentation at the Workshop

I will give a presentation at the workshop (approx. 10 min.) to present my institution, my expertise, and my collaboration interests. The contents of my presentations is summarised below (max. 1 page).

Currently, I am a faculty member of [Telecommunications Engineering Program](#) in [Sabanci University](#) and [the director of Communication Theory and Technologies \(CTT\) Group](#) at [Faculty of Engineering and Natural Sciences](#). I took my PhD degree from [Department of Electrical and Computer Engineering, Carnegie Mellon University](#) (CMU) in 2001. I have recently got the CAREER award of Turkish NSF (TUBİTAK) entitled 'signal processing and coding for wireless mesh networks'.

Data processing and fusion in sensor networks for ambient intelligence

Wireless sensor networks is an emerging technology that experiences a pervasive trend in many application areas including environment monitoring, health, security and surveillance, and robotic exploration. Advances in wireless sensors networks will enable this technology to be an integral part of our lives in the future in such ways that exceed the current role of the Internet and personal computers.

A wireless sensor network is composed of a large number of sensors that communicate and coordinate activities among themselves to achieve a particular mission. Realization of such small, low-cost, low-power, and mobile sensors have been achieved by recent advances in micro-electro-mechanical systems (MEMS) technology and digital electronics. The massive number of sensors and the broadcast structure of these networks open the doors for new distributed processing and cooperative communication techniques such as distributed data compression, tracking, classification, distributed detection, and source localization.

The ultimate objective of this research project is to advance the theory of distributed detection in wireless sensor networks by developing novel algorithms and techniques that account for the receipt of noisy decisions while minimizing energy consumption. More specifically, we will develop distributed detection algorithms by exploring the distributed nature of the sensors as well as the communication channels between these sensors. The goal is to exploit the available resources (processing and channel capacity) to facilitate the detection process. We will investigate distributed detection for sensors with binary and multi-bit decisions for both binary and M-ary hypotheses. Moreover, we will investigate serial, parallel, hierarchical detection and sequential detection algorithms. In all these cases, we will formulate the problem and provide analytical and numerical results that can be used as assessment tools to compare the proposed techniques with state-of-the-art. Then, we will investigate the effect of the proposed techniques on other parts of the system such as tracking and data compression. The proposed research is essential in the deployment of wireless sensor networks and it will advance the cooperative detection concept in new directions

I agree with the publication of my data on the Workshop website!



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PLEASE FILL IN THIS FORM **UNTIL 22 SEPT. 2006** AND RETURN IT TO:

Internationales Buero des BMBF
s.krummacher@fz-juelich.de;
Christian.schache@dlr.de

TÜBİTAK-Marmara Research Center
Sunullah.Ozbek@mam.gov.tr;
Artac.Turker@mam.gov.tr