

Topic:

Distributed Signal Processing in Sensor Networks and Applications

**First Meeting: 6th October 2008, 5pm,
Seminarroom Inffeldgasse 16c, 2nd floor**

Instructor: Franz Pernkopf, Dimitry Shutin (?), Gernot Kubin (?)

Regular Meeting: Wednesday, 10-12am, Seminarroom of ICG (Inffeldgasse 16, 2nd floor)

Recently, two nice special issues with the topic “Distributed Signal Processing in Sensor Networks” and “Sensor Networks and Applications” appeared in the IEEE Signal Processing Magazine (Volume: 23 Issue: 4, 2006) and the Proceedings of the IEEE (Vol. 91, No. 8, 2003), respectively.

IEEE *Signal Processing*
magazine

Proceedings OF THE IEEE



We would like to present and discuss some articles published in both publications (Signal Processing Magazine and Proceedings of the IEEE) during our seminar. Therefore, to each group of 1-2 students one topic (paper) is assigned. They should give an in-depth presentation of this paper and the referenced work therein (for about 1.5-2 hours). Then we would like to discuss the article – presentation. Therefore, it is necessary that each participant reads this article.

Grading: Grades are given based on the presentation and the participation in discussions (50% - 50%). The presentation slides have to be sent to pernkopf@tugraz.at

For introduction everybody should read the enclosed introduction of the guest editors:

Zhi-Quan Luo; Gastpar, M.; Juan Liu; Swami, A., **Distributed signal processing in sensor networks**, Signal Processing Magazine, Vol. 23, No. 4, 2006.

H. Gharavi; Kumar, S.P., Special issue on sensor networks and applications, Proceedings of the IEEE, Vol. 91, No. 8, 2003.

The topics are the following (Preference is given to the red-colored topics. Green color denotes 2nd choice.):

1) (Bernhard Geiger – 26th November) **Channel-aware distributed detection in wireless sensor networks**

Biao Chen; Lang Tong; Varshney, P.K., Signal Processing Magazine, Vol. 23, No. 4, 2006.

2) (Nikolaus Hammler - 19th November) **Distributed compression-estimation using wireless sensor networks**

Jin-Jun Xiao; Ribeiro, A.; Zhi-Quan Luo; Giannakis, G.B., Signal Processing Magazine, Vol. 23, No. 4, 2006.

3) (Michael Schneeberger + Bernhard Reinisch - 3rd December) **Distributed fusion in sensor networks**

Cetin, M.; Lei Chen; Fisher, J.W., III; Ihler, A.T.; Moses, R.L.; Wainwright, M.J.; Willsky, A.S., Signal Processing Magazine, Vol. 23, No. 4, 2006.

4) (Georg Piewald - 12th November) **Distributed learning in wireless sensor networks**

Predd, J.B.; Kulkarni, S.B.; Poor, H.V., Signal Processing Magazine, Vol. 23, No. 4, 2006.

5) (Harald Kröll - 26th November) **Sensing reality and communicating bits: a dangerous liaison**

Gastpar, M.; Vetterli, M.; Dragotti, P.L., Signal Processing Magazine, Vol. 23, No. 4, 2006.

6) **The interplay between signal processing and networking in sensor networks**

Qing Zhao; Swami, A.; Lang Tong, Signal Processing Magazine, Vol. 23, No. 4, 2006.

7) **Distributed video coding in wireless sensor networks**

Puri, R.; Majumdar, A.; Ishwar, P.; Ramchandran, K., Signal Processing Magazine, Vol. 23, No. 4, 2006.

8) (1 Person) **Search and discovery in an uncertain networked world**

Ermis, E.B.; Alanyali, M.; Saligrama, V., Signal Processing Magazine, Vol. 23, No. 4, 2006.

9) Coherent acoustic array processing and localization on wireless sensor networks
Chen, J.C.; Yip, L.; Elson, J.; Hanbiao Wang; Maniezzo, D.; Hudson, R.E.; Kung Yao;
Estrin, D., Proceedings of the IEEE, Vol. 91, No. 8, 2003.

10) Distributed target classification and tracking in sensor networks
Brooks, R.R.; Ramanathan, P.; Sayeed, A.M., Proceedings of the IEEE, Vol. 91, No. 8,
2003.

11) Mobile-agent-based collaborative signal and information processing in sensor
networks
Hairong Qi; Yingyue Xu; Xiaoling Wang, Proceedings of the IEEE, Vol. 91, No. 8,
2003.

12) (1 Person) Randomized data selection in detection with applications to
distributed signal processing
Sestok, C.K.; Said, M.R.; Oppenheim, A.V., Proceedings of the IEEE, Vol. 91, No. 8,
2003.

13) (1 Person) Collaborative signal and information processing: an information-
directed approach
Feng Zhao; Jie Liu; Juan Liu; Guibas, L.; Reich, J., Proceedings of the IEEE, Vol. 91,
No. 8, 2003.

14) Efficient flooding with passive clustering-an overhead-free selective forward
mechanism for ad hoc/sensor networks
Taek Jin Kwon; Gerla, M.; Varma, V.K.; Barton, M.; Hsing, T.R., Proceedings of the
IEEE, Vol. 91, No. 8, 2003.

15) Multihop sensor network design for wide-band communications
Gharavi, H.; Ban, K., Proceedings of the IEEE, Vol. 91, No. 8, 2003.

16) Distributed control applications within sensor networks
Sinopoli, B.; Sharp, C.; Schenato, L.; Schaffert, S.; Sastry, S.S., Proceedings of the
IEEE, Vol. 91, No. 8, 2003.

17) (Michael Steurer – 5th November) Sensor networks: evolution, opportunities,
and challenges
Chee-Yee Chong; Kumar, S.P., Proceedings of the IEEE, Vol. 91, No. 8, 2003.
