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<mark>PREDAVANJE ISTAKNUTOG IEEE ČLANA</mark>

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<mark>Distributed inference and social learning in wireless sensor networks</mark>

Abstract:

The past decade has seen numerous efforts towards studying distributed inference in wireless sensor networks. We aim at presenting some of these efforts with emphasis on Bayesian learning in sensor networks. The sensors have reasoning ability based on the Bayesian paradigm. They receive both private signals about the state of nature and information about the state of nature from neighboring sensors. At the end, they have to solve a task that may be detection, localization, tracking, or classification of spatio-temporal events. First, naïve learning based on weighted averages of neighbors' beliefs is discussed followed by fully Bayesian learning. Several scenarios are examined where the exchanged information with neighboring sensors can be private signals, beliefs in a certain hypothesis or states, or decisions on tested hypotheses. Comparisons of various approaches are shown and their advantages and disadvantages discussed. Fusion of information from sensors that produce different beliefs using particle filters is examined. Strategies for improved inference while saving power on communication are also addressed. All the setups are demonstrated with examples.

Predavač
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About speaker:

Petar M. Djuric (F) received his Dipl. Ing. and M.S. degrees in Electrical Engineering from the University of Belgrade, in 1981 and 1986, respectively, and his Ph.D. degree in Electrical Engineering from the University of Rhode Island (1990). From 1981 to 1986, Prof. Djuric was a Research Associate with the Institute of Nuclear Sciences, Vinca, Belgrade. Since 1990, he has been with Stony Brook University, where he is Professor, Department of Electrical and Computer Engineering. His research interests are in the area of statistical signal processing, and his primary interests are in the theory of modeling, detection, estimation, and time series analysis and its application to a wide variety of disciplines including wireless communications and biomedicine.

Prof. Djuric has served on numerous technical committees for the IEEE and has been invited to lecture at universities in the United States and overseas. His SPS activities include: Vice President-Finance (2006-09); Area Editor of Special Issues, IEEE Signal Processing Magazine (2002-05); Associate Editor, IEEE Transactions on Signal Processing (1994-96 and 2003-05); Chair, SPS Signal Processing Theory and Methods Technical Committee (2005-06); and Treasurer, SPS Conference Board (2001-03). He is an Editorial Board Member, IEEE Journal on Special Topics in Signal Processing, Elsevier Digital Signal Processing, Elsevier Signal Processing, and the EURASIP Journal on Wireless Communications and Networking. Prof. Djuric is an IEEE Fellow, as well as a Member of the American Statistical Association and the International Society for Bayesian Analysis.

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