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IEEE JOINT CHAPTER SIGNAL PROCESSING / CIRCUITS AND SYSTEMS SERBIA AND MONTENEGRO SECTION

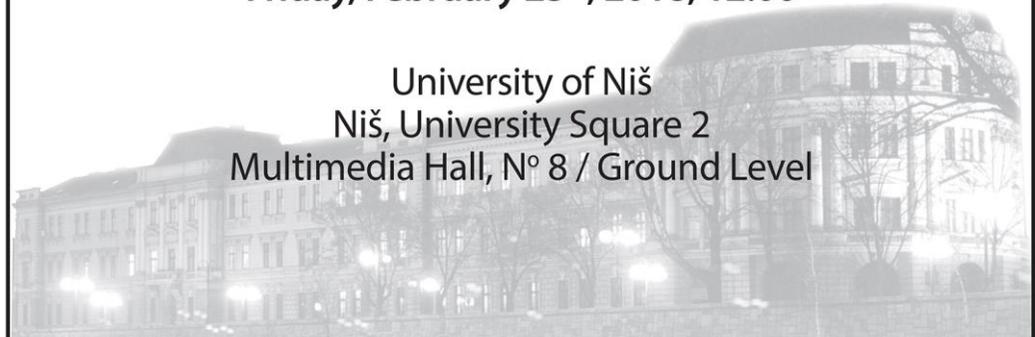**SERBIAN ACADEMY OF SCIENCES AND ARTS BRANCH IN NIŠ**

Dr. Zoran Stamenković
IHP, Frankfurt (Oder), Germany

SUPPORTING PLANT PROTECTION BY REMOTE SMART SENSING
Industrial Distinguished Lecturer Program

Friday, February 23rd, 2018, 12:00

University of Niš
Niš, University Square 2
Multimedia Hall, № 8 / Ground Level

Abstract of Lecture

Today's agriculture is heavily reliant on technology. Nevertheless, many technological challenges remain to be addressed. One of these challenges is an accurate assessment of the actual status of plant health. Real-time assessment of crop health, in particular, would enable better and timely tactical decisions for crop health management. In the sensor domain, a significant improvement is expected by replacing the costly and cumbersome sampling and laboratory measurements with on-site measurements through wireless sensor networks.

A second challenge lies in mobilizing, exploiting, and interpreting data, in particular in the science and engineering of data analysis and information extraction. By combining real-time data obtained from multiple sources, including temperature, moisture, nitrogen concentration and multispectral imagery, we envision that data-driven techniques such as machine learning will enable farmers to anticipate plant health risks and to follow a demand-driven action plan including a reduction of pesticide use.

The lecture aims to address these challenges and a comprehensive decision support system (DSS) for plant protection. The DSS combines advances beyond the state of the art in three key areas for precision agriculture. Specifically, it will focus on i) wireless sensor deployment including custom bio-integrated stretchable sensors, ii) a set of novel dynamic simulation models to assess crop loss caused by pests and diseases, and iii) design and implementation of data-driven machine learning techniques for knowledge extraction and predictive modelling.

Motivation

A wide community involved in plant health management (scientists, engineers, farmers, technicians, veterinarians, food and feed manufacturers, and retailers) would strongly benefit from the aforementioned lecture that elaborates the exploitation of advanced WSN technologies and machine learning techniques in the precision agriculture.

Lecturer's Biography

Dr. Zoran Stamenkovic is a scientist at the IHP GmbH, Frankfurt (Oder), Germany. He acquired his PhD degree in electronic engineering in 1995 from the University of Niš, Serbia. Dr. Stamenkovic has published more than 120 scientific book chapters, theses, journal papers and conference papers, and given more than 20 invited talks in the field of design and test of integrated circuits and systems.

He has participated in or led many national and European research and industrial projects with the total funding of over 10 million Euros. His research interests include hardware/software co-design, SOC design for wireless communications, fault-tolerant circuits and systems, and integrated circuit yield and reliability modelling. He serves as a program committee member of many scientific conferences (among them DDECS, MWSCAS, IPFA, MIEL, EWDTS, and DTIS). Dr. Stamenkovic was the general chair of the 18th IEEE International Symposium on Design and Diagnostics of Electronic Circuits and Systems and is the program chair of 21st IEEE International Symposium on Design and Diagnostics of Electronic Circuits and Systems. He is a regional editor of the Journal of Circuits, Systems and Computers and a senior member of the IEEE.