Nikola Zaric was born in Montenegro, in 1982. He received the B.Sc. (2005), M.Sc. (2006), and Ph.D. (2010) degrees in electrical engineering from the University of Montenegro, Podgorica, Montenegro. From 2006 to 2010, he was a Teaching Assistant with the University of Montenegro. Since 2010, he has been an Assistant Professor with the Faculty of Electrical Engineering, University of Montenegro.

In 2007 Dr. Zaric has spent one month at the University Bonn-Rhien-Sieg in Bonn, Germany. During 2008 and 2009 he stayed several times at INPG Grenoble, France, during 2010 within the Villanova University USA, and in 2014 at Ericson Nicola Tesla Zagreb.

He has published 11 papers in the leading scientific journals, and significant number of conference papers. As a co-author he has published 3 books. He serves as a reviewer in various signal and image processing scientific journal such as IEEE Transactions on Signal Processing, IEEE Transactions on Image Processing, IET Image Processing, etc. His research are in the area of digital watermarking for audio, image and video protection, time-frequency signal analysis including theoretical concepts, robust distribution forms, their applications and hardware realizations on FPGA.

His researches are in the area of digital watermarking, time-frequency signal analysis including theoretical concepts, roust distribution forms, their applications and hardware realizations on FPGA, and Web programing. He participated in several national and international projects.

Personal informations

First name: **Nikola**

Last name: **Zaric**

Birth date: **July 26, 1982**

Sex: **male**

Marital status: **Married**

Citizenship: **Montenegro**

Areas of current interest and research

Digital signal processing

Time-frequency signal analysis

Digital watermarking

Hardware for signal processing algorithms

TOPIC OF THE CURRENT RESEARCH

Time-frequency signal analysis: distribution with complex-lag argument

Digital audio and image watermarking

Time-varying filtering

Robust time-frequency distributions

Hardware Implementations of time-frequency distributions

Education

- **B.Sc., 2004**, in Electrical Engineering at the University of Montenegro.

- **M.Sc., 2006**, in Electrical Engineering at the University of Montenegro.

- **Ph.D., 2010**, in Electrical Engineering at the University of Montenegro.

Professional experience

- **2006 - 2010** , Teaching Assistant, Electrical Engineering Department, University of Montenegro

- **2010-present** - Assistant Professor at the University of Montenegro
  Courses taught: Digital Electronics, Mathematic packages, Electrical measurements,
  Meawsuremets in electronics Informatics, Web Programing.

- 2009- Public Procurement Officer, Electrical Engineering Department, University of Montenegro.

- Student Member of the IEEE since 2007

- Member of the IEEE since 2010

- Reviewer in the following journals:
  IEEE Transactions on Image Processing
  IEEE Transactions on Signal Processing
  EURASIP Journal on Advances in Signal Processing
  IET Image Processing

GRANTS AND FELLOWSHIPS

Short stays (mainly one month stays):

- **2007** Computer Vision Lab, Bonn-Rhein-Sieg University of Applied Sciences, Bonn

- **2008**, and **2009** GIPSA Lab, INPG, Grenoble

Languages

- Native language: Montenegrin

- Foreign languages: English active knowledge, Italian passive knowledge

PUBLICATIONS

Journal Papers

1. N. Zaric, S. Stankovic, Z. Uskokovic, "Hardware realization of the robust time-frequency distributions," *Annales des Telecommunications*, May 2013, 2013

2. I. Orovic, N. Zaric, S. Stankovic, I. Radusinovic, Z. Veljovic, "Analysis of Power Consumption in OFDM Systems," *Journal of Green Engineering*, Vol. 1, No. 1, pp: 477-489, 2011

3. N. Zaric, N. Lekic, S. Stankovic, "An Implementation of the L-estimate Distributions for Analysis of Signals in Heavy-Tailed Noise," *IEEE Transactions on Circuits and Systems II*, Vol 58. No.7, pp. 427-432, 2011

4. S. Stankovic, I. Orovic, N. Zaric, C. Ioana, "Two Dimensional Time-Frequency Analysis based Eigenvalue Decomposition Applied to Image Watermarking," *Multimedia Tools and Applications*, Vol.49, No. 3, pp. 529-543, 2010

5. S. Stankovic, I. Orovic, N. Zaric, "An Application of Multidimensional Time-Frequency Analysis as a base for the Unified Watermarking Approach," *IEEE Transactions on Image Processing*, Vol. 1, No. 3, pp.736-745, 2010

6. N. Zaric, I. Orovic, S. Stankovic, "Robust Time-Frequency Distributions with Complex-lag Argument," *EURASIP Journal on Advances in Signal Processing*, Vol. 2010, Article ID 879874, 10 pages, 2010

7. N. Zaric, I. Orovic, S. Stankovic, "Hardware realization of generalized time-frequency distribution with complex-lag argument," *EURASIP Journal on Advances in Signal Processing*, Volume 2009, Article ID 250794, 17 pages, 2009

8. S. Stankovic, I. Orovic, N. Zaric, "Robust watermarking procedure based on JPEG-DCT image compression," *Journal of Electronic Imaging*, Vol. 17, No. 4, Page(s) 043001, 2008

9. S. Stankovic, I. Orovic, N. Zaric, "Robust speech watermarking procedure in the time-frequency domain," *EURASIP Journal on Advances in Signal Processing*, Vol. 2008, No. ID 519206, Page(s) 9 pages, 2008

10. S. Stankovic, N. Zaric, I. Orovic, C. Ioana, "General form of time-frequency distribution with complex-lag argument,"*Electronics Letters*, Vol. 44, No. 11, pp. 699-701, 2008

11. I. Orovic, P. Zogovic, N. Zaric, S. Stankovic, "Speech Signals Protection via Logo Watermarking based on the Time-Frequency Analysis," *Annals of Telecommunication*, Vol. 63, No. 5-6, pp. 276-284, 2008

National Textbooks and Monographs

1. I. Orovic, N. Zaric, M. Dakovic, S. Stankovic, "Basics of Informatics and Information Systems 1," *textbook (in Montenegrin), Faculty for Tourism and Hotel Management*, Second edition, Sept., 2010

2. S. Stankovic, I. Orovic, N. Zaric, M. Dakovic, "Basics of informatics and information systems 1," *textbook (in Montenegrin)*, Faculty for Tourism and Hotel Management, Kotor, 2008

3. I. Orovic, N. Zaric, S. Stankovic, "Basics of Informatics and Information Systems 2," *textbook (in Montenegrin)*, Faculty for Tourism and Hotel Management, Kotor, 2008

Conferences

1. I. Orovic, N. Zaric, S. Stankovic, "An Analysis of Quantization Influence on Optimal Detection of Multiplicative Watermark," *55th International Symposium ELMAR 2013*, Zadar, Croatia, Sept. 2013, 2013

2. N. Zaric, I. Orovic, S. Stankovic, "Singular Value Decomposition And Space/Spatial-Frequency Analysis Applied To Digital Watermarking," *Proc. Of the 20th European Signal Processing Conference EUSIPCO-2012*, Vol. 2012, pp.1698-1702, 2012

3. I. Orovic, N. Zaric, S. Stankovic, M. Amin, "A multiwindow time-frequency approach based on the concepts of robust estimate theory," *IEEE International Conference on Acoustics, Speech and Signal Processing ICASSP-2011*, pp: 3584 - 3587, Prague, Czech Republic , 2011

4. I. Orovic, N. Zaric, S. Stankovic, I. Radusinovic, Z. Veljovic, "Analysis of power consumption in OFDM systems," *34th International Convention on Information and Communication Technology, Electronics and Microelectronics MIPRO2011*, pp. 653 - 657, Opatija, Croatia, 2011

5. I. Orovic, N. Zaric, S. Stankovic, "Robust Space/Spatial-Frequency Based Filtering of Images in the Presence of Heavy Tailed Noise," *20th International Conference on Computer Graphics and Vision GRAPHICON*, St. Petersburg, Russia, 2010

6. I. Orovic, S. Stankovic, N. Zaric, "Time-Frequency Rate Representation for IF Rate Estimation of Signals with Fast Varying Phase Function," *International Conference on Artificial Intelligence and Pattern Recognition AIPR-10*, pp: 234-237, Orlando, Florida , 2010

7. N. Zaric, S. Stankovic, I. Orovic, "Robust Time-Varying Filtering of Speech Signals Corrupted by Mixed Gaussian and Impulse Noise," *International Conference on Artificial Intelligence and Pattern Recognition AIPR-10*, pp: 238-242, Orlando, Florida , 2010

8. I. Orovic, N. Zaric, M. Orlandic, S. Stankovic, "A Virtual Instrument for Highly Concentrated Time-Frequency Distributions," *International Conference ETAI 2009*, Sept. 2009. Ohrid, Macedonia, 2009

9. N. Zaric, I. Orovic, M. Zogovic, S. Stankovic, "FPGA Realization of Time-Frequency Distribution with Complex-lag Argument," *International Conference ETAI 2009*, Sept, 2009., Ohrid, Macedonia, 2009

10. N. Zaric, I. Orovic, S. Stankovic, C. Ioana, "Space/Spatial-Frequency Based Image Watermarking," *Proc. 50th International Symposium ELMAR 2008, ELMAR-2008*, pp.101-104. Sept, 2008., Zadar. Croatia, 2008

11. S. Stankovic, I. Orovic, N. Zaric, C. Ioana, "An Approach to Digital Watermarking of Speech Signals in the Time-Frequency Domain," *ELMAR-2006*, Zadar, 2006

12. I. Orovic, D. Nikcevic, N. Zaric, S. Stankovic, "Modelovanje muzickih signala u vremensko-frekvencijskom domenu," *IT-2006*, Zabljak, 2006

13. N. Zaric, I. Orovic, S. Stankovic, C. Ioana, "Digitalni watermarking govornih signala zasnovan na vremenski promjenljivom filtriranju," *IT-2006*, Zabljak, 2006

Thesis

1. N. Zaric, "Vremensko-frekvencijske distribucije sa realnim i kompleksnim argumentom vremena: hardverske realizacije i primjena u digitalnom watermarkingu," *Ph.D. Thesis*, Podgorica, 2010

2. N. Zaric, "Procedure za optimalnu detekciju watermarka," *M.S. Thesis*, University of Montenegro, Podgorica, 2006