

Lazar Berbakov

Personal information:

Date of birth: October 6th 1983.
Place of birth: Novi Sad, Serbia



Education:

PhD Studies, 2008. – 2013

Faculty: Universitat Politècnica de Catalunya, Barcelona, Spain
Department: Theory of Signal and Communications
PhD thesis title: Collaborative Beamforming Schemes for Wireless Sensor Networks with Energy Harvesting Capabilities

Master Studies, 2002. – 2007.

Faculty: Faculty of Technical Sciences, Novi Sad, Serbia
Department: Power, Electronics and Telecommunication engineering
Master thesis title: Correlation between Automatic Speech Recognition system performance and used feature vectors

Courses and seminars:

2013. Course for Software Defined Radio, Castelldefels, Spain
2013. Internet of Things seminar, Barcelona, Spain
2012. Tutorial on Car-to-Car communications, Poznan, Poland
2011. GREENET seminar on Writing Academic papers and Patents, Castelldefels, Spain
2009. Wireless Communications seminar by Prof. Andrea Goldsmith, Barcelona, Spain
2007. SimLab course on "Parallel Numerical Simulation", Bitola, Rep. of Macedonia
2007. Summer Academy "MPI - Parallel computing", Budva, Montenegro

Scholarships:

2008. – 2013 Spanish Ministry of Education, FPU Grant for PhD studies
2006. Executive Council of Vojvodina, Serbia, Grant for traineeship at Telefónica del Perú

Work experience:

- Jan. 2014 – now **Institute Mihailo Pupin**, Belgrade, Serbia, www.pupin.rs
Position: Research associate
Responsibilities:
Investigation: Energy efficient techniques for Wireless Sensor Networks,
Indoor positioning algorithms,
Client-Server application for localization

Participating in project:
SPARTACUS (Satellite Based Asset Tracking for Supporting Emergency Management in Crisis Operations)
- Oct. 2008 – Jul. 2013. **CTTC** (Centre Tecnològic de Telecomunicacions de Catalunya)
Barcelona, Spain, www.cttc.es
Position: PhD candidate
Responsibilities:
Investigation: Distributed schemes for Beamforming in Wireless Sensor Network. Oscillator phase synchronization using energy efficient schemes. Power allocation for WSN with energy harvesting.

Implementation of protocols for phase synchronization and distributed beamforming. Numerical and mathematical analysis of power allocation techniques for WSN with energy harvesting capabilities.
Publishing scientific papers in international conferences and journals.

Participating in project:
JUNTOS (Joint soUrce and chaNnel cooperaTive netwOrkS)
Project manager: Deniz Gunduz, PhD
- Jul – Sep. 2006. **Telefónica del Perú**, Lima, Perú
Position: Student on exchange
Responsibilities:
Testing of MIMO systems for WiMax deployment in Perú
2002. – 2007. **Amateur Radio Club**, Novi Sad, Serbia
Position: Teacher on classes for amateur radio operators
Responsibilities:
Preparation and giving classes on morse code, antennas, propagation and electronics. Around 40 students passed the final exam.
Construction of antennas for HF.

Awards:

2006,2007	Special award University of Novi Sad
2004.	1 st place at National HF amateur radio team competition
2004.	2 nd place at National High Speed Morse telegraphy competition
2000.	1 st place at Regional High school for Electrotechnics competition

Current interests:

- Wireless Sensor Networks
- Cooperative Communication
- Indoor positioning

Computer skills:

MS-DOS, Windows, Ubuntu Linux, MS Office, Adobe Photoshop, Wordpress, C/C++, Java, Android, MPI library, Matlab, Maple, Latex, CakePHP, JavaScript,

Membership:

- Member of Institute of Electrical and Electronics Engineers – IEEE
- Amateur Radio Society of Serbia

Languages:

- Serbian:	Native
- English:	Excellent
- Spanish:	Excellent
- Catalan:	Basic
- Greek:	Good

Publications:

Journals:

Lazar Berbakov, Carles Antón-Haro, and Javier Matamoros, Joint optimization of transmission policies for collaborative beamforming with energy harvesting sensors. *IEEE Transactions on Wireless Communications*, Volume 13, Issue 7, June 2014, Pages 3496 - 3509.

Lazar Berbakov, Carles Antón-Haro, and Javier Matamoros, Optimal Transmission Policy for Cooperative Transmission with Energy Harvesting and Battery Operated Sensor Nodes. *Elsevier Signal Processing Journal*, Volume 93, Issue 11, November 2013, Pages 3159–3170.

Conferences:

Lazar Berbakov, Bogdan Pavković and Sanja Vraneš, Smart Indoor Positioning System for Situation Awareness in Emergency Situations, in *Proceedings of ISSASIM 2015*, Sep 2015, Valencia (Spain).

Lazar Berbakov, Bogdan Pavković and Sanja Vraneš, Smart-phone application for autonomous indoor positioning, in *Proceedings of IEEE I2MTC 2015 conference*, May 2015, Pisa (Italy).

Stefan Trailović, Lazar Berbakov, Dejan Todorović, Vukašin Ristić, Nikola Nenadić, Iva Salom, Analiza kvaliteta različitih realizacija AAC audio kodeka na ARM procesorskim arhitekturama, in *Proceedings of 22nd Telecommunications Forum (TELFOR 2014)*, Nov. 2014, Belgrade (Serbia).

Lazar Berbakov, Marko Beko, Distributed Carrier Synchronization and Data Transmission in Wireless Sensor Networks, in *Proceedings of 22nd Telecommunications Forum (TELFOR 2014)*, Nov. 2014, Belgrade (Serbia).

Bogdan Pavković, Lazar Berbakov, Miloš Milenković, Sanja Vraneš, Situation awareness and decision support tools for response phase of emergency management: a short survey, in *Proceedings of 4th DEXA Workshop on Information Systems for Situation Awareness and Situation Management (ISSASiM)*, Sep. 2014, Munich (Germany).

Javier Matamoros, Carles Antón-Haro, David Gregoratti, L. Berbakov, Distributed Beamforming Control with One-bit of Feedback, in *Proceedings of European Wireless Conference*, May. 2014, Barcelona (Spain).

Lazar Berbakov, Carles Anton-Haro and Javier Matamoros, Optimal Transmission Policy for Collaborative Beamforming with Finite Energy Storage Capacity, in *Proceedings of IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC 2013)*, Sep. 2013, London (UK).

Lazar Berbakov, Javier Matamoros, and Carles Antón-Haro, Greedy transmission strategies for collaborative beamforming with energy harvesting sensors, in *Proceedings of 7th International ITG Workshop on Smart Antennas (WSA 2013)*, March 2013, Stuttgart (Germany)

Lazar Berbakov, Javier Matamoros, and Carles Antón-Haro, Optimal Transmission Policy for Distributed Beamforming with Energy Harvesting and Battery Operated Sensor Nodes, in *Proceedings of International Symposium on Wireless Communication Systems (ISWCS 2012)*, Aug. 2012, Paris (France).

Lazar Berbakov, Carles Antón-Haro, and Javier Matamoros, Decentralized phase synchronization scheme for distributed beamforming in WSN with quantized phase feedback, in *Proceedings of Future Network Mobile Summit (FUNEMS 2012)*, July 2012, Berlin (Germany).

Lazar Berbakov, Carles Antón-Haro, and Javier Matamoros, Distributed beamforming using one

bit of feedback: AWGN analysis, in Proceedings of 18th European Wireless Conference (EW 2012), Apr. 2012, Poznan (Poland).

Lazar Berbakov, Javier Matamoros, and Carles Antón-Haro, Decentralized phase synchronization scheme for collaborative beamforming in wireless sensor networks, in Proceedings of 19th European Signal Processing Conference (EUSIPCO 2011), Sep. 2011, Barcelona (Spain).

Lazar Berbakov, Carles Antón-Haro, and Javier Matamoros, Distributed beamforming with sidelobe control using one bit of feedback, in Proceedings of 73rd Vehicular Technology Conference (VTC Spring 2011), May 2011, Budapest (Hungary).

Lazar Berbakov, Nikša Jakovljević, Zavisnost performansi sistema za prepoznavanje govora od izbora obeležja, širine i preklapanja prozora, 15th TELFOR Conference 2007, Belgrade, Serbia.

Lazar Berbakov, Nikša Jakovljević, Izrada sistema za automatsko prepoznavanje govora na srpskom jeziku korišćenjem programskog alata HTK, 51st ETRAN Conference 2007, Igalo, Montenegro.