

# MATIJA ŠTRBAC

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## Education

### **School of Electrical Engineering, University of Belgrade, Serbia (October 2011 - present)**

PhD studies, Laboratory for Biomedical Instrumentation and Technologies Engineering, studies and research oriented towards computer vision applications in the field of clinical engineering.

### **School of Electrical Engineering, University of Belgrade, Serbia (October 2010 – September 2011)**

Master studies, Signals and Systems Department. Courses studied include Soft Computing Methods, Embedded Systems Programming, Modelling of Biophysical Systems, Neural Engineering and Decision Making Systems in Medicine. Master theses focused on advantages of the elastic foot model in gait analyses software. All the courses passed and the master theses defended with the highest grade 10.

### **School of Electrical Engineering, University of Belgrade, Serbia (October 2006 – July 2010)**

Undergraduate studies, Signals and Systems Department. Majoring in Signal Processing and Biomedical Engineering with a strong backing in computer sciences, especially programming. Bachelor of Science degree obtained with final GPA 9.62 out of 10 which is considered to be in top 2% of the school (out of over 2000 students).

### **Sixth Belgrade Gymnasium (Grammar School), Serbia (2002 - 2006)**

Studies oriented to natural sciences and mathematics, finished with a GPA of 4.8 out of 5.

## Scholarships

### **Ministry of Education, Government of the Republic of Serbia (2007 – 2009)**

An introductory scholarship for all students who study on state university and have a GPA over 8.50.

### **Fund for Young Talents, Ministry of Youth and Sport, Government of the Republic of Serbia (2009 – 2011)**

A scholarship for the best 1000 students who are on a final year of their basic academic studies or on a final year of their graduate academic studies and study on the university founded by the Republic of Serbia.

## Work Experience

### **[Project Leader] Tecnalia Research and Innovation, San Sebastian, Spain (April 2013 – present)**

Lead researcher in Tecnalia Serbia node working on the MAXSENS and FESAPP UE projects. Aim of the MAXSENS project is to develop a device for afferent stimulation over the multi-pad electrodes of various designs and optimize the interface for electro tactile feedback. The FESAPP UE project is centred on functional electrical stimulation system for rehabilitation of upper extremities for home and clinical use that allows automatic calibration of the active electrodes and stimulation parameters.

### **[Research Assistant] School of Electrical Engineering, University of Belgrade, Serbia (January 2012 – present)**

Part of the team working on the “The effects of assistive systems in neurorehabilitation: recovery of sensory-motor functions” research project (project number 175016) of the Ministry of Education and Science, Republic of Serbia. Project coordinator: Prof. Mirjana Popović, Institute for Multidisciplinary Research and Faculty of Electrical Engineering, University of Belgrade, Serbia.

### **[Website development] Polytechnic University, Hong Kong (July 2010 – September 2010)**

Internship offer attained through IAESTE, exchange program for the top students. Website implementation project of the Student affairs office of Hong Kong Polytechnic University. On this job I was responsible for creating the website for ‘Preferred Graduate’ Development Programme using MODx content management system.

### **[Education, assistance] School of Electrical Engineering, University of Belgrade, Serbia**

Undergraduate teaching assistant at various courses in diverse fields of electrical engineering:

**Automated Control Systems (2009 – 2010).** Teaching students about processing of control signals in Matlab, culminating with an exercise in which students create a feedback loop through Matlab to control a DC motor. Duties include helping out students during exercises in computer laboratory.

**Computer Architecture and Organization (2008 – 2010).** This course clarifies concepts of hardware design and fundamental operational structure of a computer system. Work includes explaining students these concepts on some sort of computer simulator, supervising them during lab exercises and grading their knowledge in the field.

**Object-Oriented Programming (2008 – 2011).** Course consists of the fundamental concepts of object-oriented programming, the concept and implementation of design patterns and beginner and intermediate level of C++ programming. Duties include helping students out during exercises in computer laboratory, assessment and grading of their knowledge and homework assignments.

## Published Papers

BioMed Research International (J Biomedicine and Biotechnology), Article ID 740469, 12 pages, 2014

*Microsoft Kinect based artificial perception system for control of functional electrical stimulation assisted grasping*

Matija Štrbac, Slobodan Kočović, Marko Marković and Dejan Popović

Journal of Automatic Control, vol. 21(1), pp 7-11, 2013

*Feedback control of the forearm movement of tetraplegic patient based on Microsoft Kinect and multi-pad electrodes*

Matija Štrbac, Nebojša Malešević, Radoje Čobeljić and Laszlo Schwirtlich

Journal of Automatic Control, vol. 21(1), pp 13-18, 2013

*Electrical stimulation of the forearm: a method for transmitting sensory signals from the artificial hand to the brain*

Minja Perović, Marija Stevanović, Tijana Jevtić, Matija Štrbac, Goran Bijelić, Čedomir Vučetić, Lana Popović Maneski and Dejan B. Popović

Computational and Mathematical Methods in Medicine, Vol. 2012, Article ID 421796

*Software Tool for the Prosthetic Foot Modeling and Stiffness Optimization,*

Štrbac Matija and Popović Dejan

Serbian Journal of Electrical Engineering, Vol.8, No.1

*Stereovision System for Estimation of the Grasp Type for Electrotherapy*

Štrbac Matija and Marković Marko

## International Conferences

10th Mediterranean Congress of PRM 2013

*Optimization of active pads on a multipad electrode for selective finger movements based on accelerometer data*

Jevtić T, Štrbac M, Janković M, Popović - Maneski L, Bijelić G, Popović DB

*Computer vision system for assessment of hand manipulation*

Štrbac M, Kljajić J, Okosanović M, Popović M

IFESS Conference 2013

*Feedback control of the forearm movement of tetraplegic patient based on Microsoft Kinect and multi-pad electrodes*

M. Štrbac, N. Malešević, R. Čobeljić and Laszlo Schwirtlich

NEUREL 2012, 11<sup>th</sup> Symposium on Neural Network Applications in Electric Engineering, Belgrade

*Kinect in Neurorehabilitation: Computer vision system for real time hand and object detection and distance estimation,*

Štrbac Matija, Marković Marko and Popović Dejan.

TELFOR 2012, 20<sup>th</sup> Telecommunications Forum, Belgrade

*Wireless camera network system: test of concept*

Štrbac Matija, Kevac Ljubinko, Popović Ivan and Jovičić Nenad.

## Skills

### Personal

Curious, nimble, willing to learn, efficient, both independently, and as part of a team, adaptive, motivated.

### Programming languages

Expert: C, C++, Java, HTML.

Advanced: JavaScript, CSS, PHP, MySQL, Pascal, 8086 Assembler.

### Operating systems

Using now, or have been using earlier: Microsoft Windows, MS-DOS, Mac OS X.

### Tools

Microsoft Visual Studio, Dev-C++, JCreator, Matlab, Maple, LabView, Microsoft Office, OpenOffice.org, Microsoft Visio, Adobe Photoshop, StarUML, mikroC, RSVIEW32.

### PC Hardware

Several years of experience in assembling, upgrading, maintaining and repairing PCs and LANs.

### Languages

Native Serbian, excellent English (fluent in conversation, reading and writing), beginner German (reading and writing), beginner Italian (reading and writing).

### Other

Valid driver license for vehicle up to eight seats and 3.5t(B category).

### Interests and hobbies

Music and vinyl collecting, playing guitar, fitness, nutrition, travelling, books and comic books, latest technologies.

## References

### Dejan Popović, Ph.D.

Professor, Signals and Systems Department, School of Electrical Engineering, University of Belgrade

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### Goran Bijelić, MSc.

Office Director, Tecnalía Serbia, Belgrade

e-mail: [goran.bijelic@tecnalia.com](mailto:goran.bijelic@tecnalia.com)

### Mirjana Popović, Ph.D.

Professor, Signals and Systems Department, School of Electrical Engineering, University of Belgrade

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