

Curriculum Vitae

Kosta Jovanović, Ph.D. El.Eng.

Personal

Name: Kosta M. Jovanović

Born: 17th of July 1986, Cacak, Serbia

Citizenship: Serbian

Industry: Robotics and Mechatronics

Research interest: human-like robot actuators, robot modeling, simulation and control.

Current position: Assistant Professor, ETF Robotics laboratory ([link](#)), Department of Signals & Systems ([link](#)), School of Electrical Engineering ([link](#)), University of Belgrade ([link](#))

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Education

PhD degree (2010–2016) School of Electrical Engineering, University of Belgrade / DLR Institute of Robotics and Mechatronics, Oberpfaffenhofen, Germany
PhD thesis: Modeling and control of the anthropomorphic robot with antagonistic joints in contact and non-contact tasks
Supervisor: Prof. Veljko Potkonjak; *Committee members:* Prof. Mirjana Popović; Prof. Aleksandar Rodić; Prof. Alin Albu-Schäffer; Prof. Željko Đurović

Masters degree (2009–2010) School of Electrical Engineering, University of Belgrade
Department: Signals & Systems / *Field:* Control systems & Robotics
GPA: 10.00 (out of 10.00)

Dipl. Ing. degree (2005–2009) School of Electrical Engineering, University of Belgrade
Department: Signals & Systems / *Field:* Control systems & Mechatronics
GPA: 9.96 (out of 10.00) - award for the best graduated student on department

Experience – Professional engagements

Assistant Professor 9/2016 - present Laboratory for Robotics – ETF Robotics, School of Electrical Engineering, University of Belgrade (courses: Hydraulics & Pneumatics Systems, CNC machines, Robotics & Automation, Theory of Robotic Systems, Sensors in Robotics, Robotics Systems). (www.etf.rs)

Teaching & Research Assistant 3/2010 – 9/2016 Laboratory for Robotics – ETF Robotics, School of Electrical Engineering, University of Belgrade (courses: Hydraulics & Pneumatics Systems, CNC machines, Robotics & Automation, Theory of Robotic Systems, Sensors in Robotics, Robotics Systems). (www.etf.rs)

Guest Researcher 5/2013 – 11/2013 DLR Institute of Robotics and Mechatronics, German Aerospace Center (DLR). Robot Control Department. – DAAD grant for PhD research. Supervisor: Alin Albu-Schäffer. Munich, Germany. (<http://www.dlr.de/rm/>)

Guest Researcher 7/2010 – 8/2010	TUM (Technical University of Munich). Department for Robotics & Embedded Systems, Munich, Germany. (www6.in.tum.de)
Intern 6/2009 – 9/2009	SMS Siemag A.G., Hilchenbach, Germany. Department of Electronic & Automation. (www.sms-siemag.com)
Professional trainings	Saphari NMMI Winter School on Robotics: Variable Stiffness Actuators, Sapienza University of Rome, Rome, Italy. (<i>February 2015</i>) Proposal Writing and International Project Management for Young Researchers (<i>by Iris Löhrmann & Stephan Heilmann, TU Berlin, October 2014</i>) Flatness based control of nonlinear systems (<i>by prof. Dr.-Ing. J. Rudolph, Saarland University, October 2013</i>) Summer School on Soft Robotics, Swiss Federal Institute for Technology ETH Zurich, Switzerland. (<i>June 2012</i>)

Experience – Projects

FS4SMIH (coordinator) 9/2016 - present	Feasibility Study for Serbian Manufacturing Innovation Hub. Funded by H2020 call I4MS.
Cooperative robots educational cell (coordinator) 6/2016 - present	Integration of two industrial robots within the flexible industrial cell equipped with conveyors, diverse sensor systems, an advanced safety system as a platform for education of robotics and engineering. Local project sponsored by companies: ABB, Denso, Siemens, Servotek, Tiptek, Gimatic, UnoLux Processing, etc.
Robotization of Serbia (coordinator) 10/2014 - present	Robotization of Serbia - educational and science promotion project. Funded by Serbian Center for the Promotion of Science, Erste Bank, and Comtrade.
Anth. Serv. Robot 1/2011 - present	Ambient intelligent service robot of anthropomorphic characteristics. Funded by Serbian Ministry of Education, Science and Tech. Development, no. TR35003.
ECCEROBOT 10/2009 – 2/2012	Embodied Cognition in a Compliantly Engineered Robot – <i>ECCEROBOT</i> . Funded by EU FP7, Challenge 2- Cognitive Systems, Interaction, Robotics - under grant agreement no. 231864 (www.eccerobot.org)
Days of future: Robotics 5/2012 – 10/2012	Science popular manifestation “Days of Future: Robotics” (24th of Sept. – 15th of Oct. 2012), main responsible for robot exhibition and science popular lectures session. In cooperation with Serbian Center for the Promotion of Science. (http://danibuducnosti.rs/)

Awards

2018	AmCham Leader in Change HERO Award – Award of American Chamber of Commerce in Serbia for Excellence in Serbian Society
2017	Best Paper Award – Section: Robotics and Flexible Automation, 4 th International Conference on Electrical, Electronic and Computing Engineering (IcETAN 2017)
2016	Best Paper Award – Section: Robotics and Flexible Automation, 3 rd International Conference on Electrical, Electronic and Computing Engineering (IcETAN 2016)
2016	Youth Heroes: 1 st Price in Category Education and Science. Issuer: Exit Foundation and NIS Gasprom Neft.

- 2015** Winner of Saphari NMMI Winter School on Robotics: Variable Stiffness Actuators, Sapienza University of Rome, Rome, Italy.
- 2014** Best Young Researcher Award – Section: Robotics and Flexible Automation, 1st International Conference on Electrical, Electronic and Computing Engineering (IcETRAN 2014)
- 2013** SUPERSTE award for the best Serbian young scientist (up to 27 age) in the field of natural and technical sciences
- 2013** Belgrade award (event of the year 2012 in Belgrade) – Days of Future: Robotics (organization team: Aleksandra Drecun, *Serbian Center for the Promotion of Science*; prof. Veljko Potkonjak, Kosta Jovanovic, *School of Electrical Engineering, University of Belgrade*)
- 2013** DAAD grant for research stay at DLR Institute on Robotics and Mechatronics, Munich, Germany
- 2012** Nikola Tesla Junior Achievement Award for the outstanding achievements of young people in the field of technology in 2011
- 2011** The 1st prize at the 17th International Students Competition in Engineering – ICAMES 2011 – Istanbul; role – team adviser
- 2011** Belgrade University Award for the best student scientific work in the field of technical & technological sciences at Belgrade University in 2010/2011.
- 2009** Award for the best graduated student in 2009 at the Department for Signals & Systems, Faculty of Electrical Engineering, University of Belgrade
- 2009** “Zoran Djindjic Internship Programme of German Business” scholarship for professional education in Germany

Publications

Citations – 176; h-index – 8 (source: Scopus)

Citations – 326; h-index – 9 (source: Google Scholar)

Book chapter:
(1)

1. V. Potkonjak, **K. Jovanovic**, P. Milosavljevic. *Springer Series on Mechanisms and Machine Science – New trends in Medical and Service Robotics, Vol 20*, (2014). Chapter 20: “How to Control Anthropomorphic Robot: Engineering and Cognitive Approach” (ISBN 978-3-319-05431-5, DOI: 10.1007/978-3-319-05431-5)

International Journals:
(10)

1. M. Tomic, C. Chevallereau, **K. Jovanovic**, V. Potkonjak, A. Rodic´, “Human to humanoid motion conversion for dual arm manipulation tasks”, *Robotica*, accepted.

2. M. Tomic, **K. Jovanovic**, C. Chevallereau, V. Potkonjak, A. Rodic´, “Towards optimal mapping of human dual arms motion to humanoid motion for tasks involving contact with the environment”, *International Journal of Advanced Robotic Systems*, Vol 15(1), 2018, pp 1-19.

3. **K. Jovanovic**, B. Lukic, V. Potkonjak, “Feedback linearization for decoupled position/stiffness control of bidirectional antagonistic drives”, *Facta Universitatis – Series: Electronics and Energetics*, Vol 31(1), 2018, pp 51-61.

4. V. Potkonjak, M. Gardner, V. Callaghan, P. Mattila, C. Guetl, V. Petrović, **K. Jovanovic**, “Virtual Laboratories for Education in Science, Technology, and Engineering: a Review”, *Computers & Education (Elsevier)*, Vol 95, 2016, pp 309-327.

5. **K. Jovanovic**, V. Potkonjak, O. Holland, “Dynamic Modelling of an Anthropomorphic Robot in Contact Tasks”, *Advanced Robotics: The International Journal of the Robotics Society of Japan (Taylor & Francis)*, Vol 28(11), 2014, pp 793-806.

6. V. Antoska, **K. Jovanovic**, V. Petrovic, N. Bascarevic, M. Stankoviski, “Balance Analysis of the Mobile Anthropomorphic Robot Under Disturbances – ZMP Approach”,

International Journal of Advanced Robotic Systems, Vol 10(paper 206), 2013, pp 1-10.

7. S. Wittmeier, C. Alessandro, N. Bascarevic, K. Dalamagkidis, A. Diamond, M. Jantsch, **K. Jovanovic**, R. Knight, H. G. Marques, P. Milosavljevic, B. Svetozarevic, V. Potkonjak, R. Pfeifer, A. Knoll, O. Holland, "Towards Anthropomorphic Robotics", *Artificial Life, (MIT press)*, Vol 19(1), 2013, pp 171-193.

8. V. Potkonjak, **K. Jovanovic**, O. Holland, J. Uhomobhi, "Distance learning and skill acquisition in engineering sciences – present state and prospects", *Multicultural Education and Technology Journal (Emerald)*, Vol 7(1), 2013, pp 64-88.

9. V. Potkonjak, B. Svetozarevic, **K. Jovanovic**, O. Holland, "The puller-follower control of compliant and noncompliant antagonistic tendon drives in robotic system", *International Journal of Advanced Robotic Systems (InTech)*, Vol 8, 2012, pp 143-155.

10. V. Potkonjak, M. Vukobratovic, **K. Jovanovic**, M. Medenica, "Virtual Mechatronic/Robotic laboratory - A step further in distance learning", *Computers & Education (Elsevier)*, Vol 55, 2010, pp 465-475.

Domestic journals:
(3)

1. V. Petrovic, **K. Jovanovic**, V. Potkonjak, "Dynamics Based Modeling of Wheeled Platform for Humanoid Robot Torso", *Serbian Journal of Electrical Engineering*, Vol 13(3), (2016) pp 335-345 (ISSN 1451-4869)

2. **K. Jovanović**, J. Vranić, N. Miljković, "Hill's and Huxley's Muscle Models – Tools for Simulations in Biomechanics", *Serbian Journal of Electrical Engineering*, Vol 12(1) (2015) pp 53-67 (ISSN 1451-4869)

3. B. Svetozarevic, **K. Jovanovic**, "Control of Compliant Anthropomorphic Robot Joint", *Serbian Journal of Electrical Engineering*, Vol 8(1), (2011) pp 85-93 (ISSN 1451-4869)

International Conferences:
(16)

1. Z. Gordic, **K. Jovanovic**, "Fully Integrated Torque-Based Collision Detection in Periodic Tasks for Industrial Robots with Closed Control Architecture", *Advances in Intelligent Systems and Computing (Proc. 27th IFTOMM International Conference on Robotics in Alpe-Adria-Danube Region – RAAD 2018)*, accepted.

2. B. Lukic, **K. Jovanovic**, T. Sekara, "Dual Loop Gain Scheduling Controller of Antagonistic Actuators Based on System Identification", *Advances in Intelligent Systems and Computing (Proc. 27th IFTOMM International Conference on Robotics in Alpe-Adria-Danube Region – RAAD 2018)*, accepted.

3. B. Lukic, **K. Jovanovic**, "Minimal Energy Cartesian Impedance Control of Robot with Bidirectional Antagonistic Drives", *Advances in Intelligent Systems and Computing (Proc. 25th IFTOMM/IEEE International Conference on Robotics in Alpe-Adria-Danube Region – RAAD 2016)*, January 2017, pp. 56-64.

4. V. Petrovic, B. Nikolic, **K. Jovanovic**, V. Potkonjak "Development of Virtual Laboratory for Mechatronic Systems", *Advances in Intelligent Systems and Computing (Proc. 25th IFTOMM/IEEE International Conference on Robotics in Alpe-Adria-Danube Region – RAAD 2016)*, January 2017, pp. 622-630.

5. B. Lukic, **K. Jovanovic**, G. Kvascev, "Feedforward Neural Network for Controlling Qbmove Maker Pro Variable Stiffness Actuator", *The 13th Symposium on Neural Networks Applications in Electrical Engineering (NEUREL 2016)*, Belgrade, Serbia, September, 2016., pp 67-70.

6. V. Potkonjak, V. Petrovic, **K. Jovanovic**, D. Kostic, "Human-Robot Analogy – How Physiology Shapes Human and Robot Motion", *Proc. European Conference on Artificial Life (ECAL 2013, MIT Press)*, Taormina, Italy, September 2013, pp. 136-143.

7. V. Potkonjak, **K. Jovanovic**, V. Petrovic, O. Holland, J. Uhomobhi, "Virtual Ambient for E-Learning in Engineering Sciences", *Proc. Conference of the International Journal of Arts and Sciences*, Valletta, Malta, March 2013, Vol. 6(1), pp. 7-14.

8. V. Potkonjak, N. Bascarevic, P. Milosavljevic, **K. Jovanovic**, O. Holland, „Experience-Based Fuzzy Control of an Anthropomorphic Robot“, *Proc. International Joint Conference on Computational Intelligence (CFP IJCCI 2012)*, Barcelona, Spain, October 2012., pp 389-394

9. N.Bascarevic, **K. Jovanovic**, P. Milosavljevic, V. Potkonjak, O. Holland, „Tip-over Stability Examination of a Compliant Anthropomorphic Mobile Robot“, *Proc. 2012 IEEE International Conference on Control Applications (IEEE CCA 2012)*, Dubrovnik, Croatia, October 2012., pp 1584-1589

10. P. Milosavljevic, N.Bascarevic, **K. Jovanovic**, G. Kvascev, "Neural networks in feedforward control of a robot arm driven by antagonistically coupled drives", *The 11th Symposium on Neural Networks Applications in Electrical Engineering (NEUREL 2012)*, Belgrade, Serbia, September, 2012., pp 77-80

11. P. Milosavljevic, **K. Jovanovic**, N.Bascarevic, V. Potkonjak, O. Holland, „Heuristic

Machine-Learning Approach to the Control of an Anthropomorphic Robot Arm“, Proc. 10th IFAC Symposium on Robot Control (SYROCO 2012), Dubrovnik, Croatia, September 2012., pp 301-306

12. V. Potkonjak, **K. Jovanovic**, P. Milosavljevic, N. Bascarevic, O. Holland, “The Puller-Follower Control Concept For The Multi-Joint Robot With Antagonistically Coupled Compliant Drives”, *The 2nd IASTED International Conference on Robotics (Robo 2011)*, Pittsburgh, USA, November 2011. pp 375-381

13. V. Potkonjak, **K. Jovanovic**, B. Svetozarevic, O. Holland, D. Mikicic, “Modeling and Control of a Compliantly Engineered Anthropomorphic Robot in Contact Tasks”, *The 35th ASME Mechanisms and Robotics Conference*, Washington, DC, USA, August 2011. pp 23-32(presenting author)

14. V. Potkonjak, B. Svetozarevic, **K. Jovanovic**, O. Holland, “Anthropomorphic Robot with Passive Compliance – Contact Dynamics and Control”, *The 19th Mediterranean Conference on Control and Automation*, Corfu, Greece, Jun 2011. pp 1059 – 1064

15. V. Potkonjak, B. Svetozarevic, **K. Jovanovic**, O. Holland, “Biologically-inspired control of a compliant anthropomorphic robot”, *The 15th IASTED International Conference on Robotics and Applications*, Cambridge, Massachusetts, USA, November 2010. pp 182-189 (presenting author)

16. V. Potkonjak, B. Svetozarevic, **K. Jovanovic**, O. Holland, “Control of Compliant Anthropomorphic Robot Joint”, *International Conference of Numerical Analysis and Applied Mathematics*, Rhodes, September 2010. pp 1271-1274

Domestic conferences:

(16)

1. Z. Gordić, **K. Jovanović**, V. Potkonjak, M. Majstorović, “Partial Pose Measurements for Identification of Denavit-Hartenberg Parameters of an Industrial Robot”, The 4th IcETRAN Conference, Kladovo, Serbia, Jun, 2017. pp ROI1.6- 1-4.

2. N. Knežević, **K. Jovanović**, Z. Gordić, V. Potkonjak, M. Majstorović, “Hazard Identification, Risk Assessment and Safety Integration for Flexible Robotic Cell”, The 4th IcETRAN Conference, Kladovo, Serbia, Jun, 2017. pp ROI1.3- 1-4.

3. **K. Jovanovic**, B. Lukic, V. Potkonjak, “Enhanced Puller-Follower Approach for Stiffness Control of Antagonistic Drives”, *The 3rd IcETRAN Conference*, Zlatibor, Serbia, June, 2016. pp ROI1.2- 1-6.

4. B. Lukic, **K. Jovanovic**, A. Rakic, “Realization and Comparative Analysis of Coupled and Decoupled Control Methods for Bidirectional Antagonistic Drives: QBmove Maker Pro”, *The 3rd IcETRAN Conference*, Zlatibor, Serbia, June, 2016. pp ROI1.1- 1-6.

5. **K. Jovanovic**, P. Milosavljevic, V. Potkonjak, “Control Design for Pick-and-Place Task Using Robot with Intrinsic Compliance - QB Robot”, *The 2nd IcETRAN Conference*, Srebrno jezero, Serbia, June, 2015. pp ROI1.1- 1-6.

6. B. Lukic, **K. Jovanovic**, “Influence of Mechanical Characteristics of a Compliant Robot on Cartesian Impedance Control Design”, *The 2nd IcETRAN Conference*, Srebrno jezero, Serbia, June, 2015. pp ROI2.5- 1-6.

7. D. Zivkovic, A. Bukvic, V. Obradovic, **K. Jovanovic**, “Implementation of Extended Kalman Filter in Localization of Mobile Robots”, *The 2nd IcETRAN Conference*, Srebrno jezero, Serbia, June, 2015. pp ROI1.3- 1-6.

8. **K. Jovanovic**, J. Vranic, “Muscle Models for Accurate Simulation of Human Movements”, *The 1st IcETRAN Conference*, Vrnjacka Banja, Serbia, June, 2014. pp ROI2.4- 1-5.

9. Z. Gordic, **K. Jovanovic**, “Modeling and Control of Car Handling Box System”, *The 1st IcETRAN Conference*, Vrnjacka Banja, Serbia, June, 2014. pp ROI3.4- 1-6.

10. V. Petrovic, **K. Jovanovic**, V. Potkonjak, “ZMP approach to the critical design of a mobile platform for the semi-anthropomorphic robot”, *The 57th ETRAN Conference*, Zlatibor, Serbia, June, 2013. pp RO1.1- 1-6

11. V. Potkonjak, **K. Jovanovic**, “Step toward distance learning in engineering disciplines – Virtual laboratory for robotics and mechatronics”, *The 56th ETRAN Conference*, Zlatibor, Serbia, June, 2012. pp RO1.1- 1-4

12. N. Bascarevic, **K. Jovanovic**, V. Potkonjak, “A tip-over stability analysis of an anthropomorphic wheeled robot based on zmp”, *The 56th ETRAN Conference*, Zlatibor, Serbia, June, 2012. pp RO2.9 - 1-4

13. **K. Jovanovic**, N. Bascarevic, “Modeling Contact Dynamics of the Anthropomorphic Robot – ECCEROBOT”, *The 55th ETRAN Conference*, Teslic, Bosnia and Herzegovina, June, 2011. pp RO1.8- 1-4

14. P. Milosavljevic, **K. Jovanovic**, V. Potkonjak, “The Puller-Follower Control Concept in the Multi-Jointed Anthropomorphic Robot Body”, *The 55th ETRAN Conference*, Teslic,

Bosnia and Herzegovina, June, 2011. pp RO1.7- 1-4
 15. **K. Jovanovic**, B. Svetozarevic, "Humanoid Robot Model with Antagonistic Drives", *The 5th ETRAN Conference*, Donji Milanovac, Serbia, June, 2010. pp RO1.3 - 1-4
 16. B. Svetozarevic, **K. Jovanovic**, "Control of Compliant Anthropomorphic Robot Joint", *The 5th ETRAN Conference*, Donji Milanovac, Serbia, June, 2010. pp RO1.4 - 1-4

Reviewer activities

Books: Roboti, Serbian Center for the Promotion of Science, September 2012.

Magazines: Elementi (<http://www.cpn.rs/elementi/>), quarterly published by Serbian Center for the Promotion of Science, since July 2015, ISSN 2406-3002

Journals: IEEE Robotics and Automation Letters, ISSN 2377-3766
 IEEE Transactions on Control Systems Technology, ISSN 1063-6536
 IEEE Transactions on Neural Systems & Rehabilitation Engineering, ISSN: 1534-4320
 International Journal of Humanoid Robotics, World Scientific, ISSN: 0219-8436
 International Journal of Intelligent & Robotics Systems, Springer-Verlag Dordrecht, ISSN: 0921-0296
 Robotica, Cambridge University Press, ISSN: 1469-8668
 Computer Application In Engineering Education, John Wiley and Sons, ISSN: 1061-3773

Conferences: IEEE International Conference on Robotics and Automation
 Mediterranean conference on control and automation (MED) – IEEE CSS
 World Congress of the International Federation of Automatic Control - IFAC
 IFToMM/IEEE 25th International Conference on Robotics in Alpe-Adria-Danube Region (RAAD 2016)

Other: Member of National Organizing Committee – IFToMM/IEEE 25th International Conference on Robotics in Alpe-Adria-Danube Region (RAAD 2016), (<http://raad2016.org/>)

Activities

10/2011 - present Zoran Djindjic internship programme of German business scholarship holders - alumni club; Belgrade alumni club coordinator (<http://www.stipendienprogramm.org/>)

10/2009 - present Member of ETF Robotics research group (<http://robot.etf.rs>)

2/2014 - present Member of DAAD Belgrade Alumni club

11/2007 - present Member of MENSА – Serbia & Montenegro

12/2007 – 10/2010 EESTEC – Electrical Engineering Students' European Association <http://eestec.etf.rs/>

Other skills

Professional memberships: IEEE Robotics & Automation Society, DAAD alumni club

Languages: English (advanced)
 German (basic)

Computer skills: MS Office / Internet
 Tools - Matlab & Simulink, C/C++, LogiCAD, Step7

Personality: well organized, responsible, ambitious, communicative, team player, hardworking.