

# Curriculum Vitae –Branko Lukić, M.Sc.E.E.

## Personal

**Name:** Branko Lukić

**Born:** 30<sup>th</sup> of March 1990, Loznica, Serbia

**Citizenship:** Serbian

**Current position:** Research Assistant at ETF Robotics Laboratory, Signals & Systems Department, School of Electrical Engineering, University of Belgrade

**Address:** Bulevar kralja Aleksandra 73, 11120 Belgrade, Serbia

**Phone:** +381 64 2948261

**E-mail:** [branko@etf.rs](mailto:branko@etf.rs)

**ORCID:** <https://orcid.org/0000-0003-0430-6560>

**LinkedIn:** <https://rs.linkedin.com/pub/branko-lukić/60/ba2/ba9>

**Google Scholar:** <https://scholar.google.com/citations?user=oCrPeacAAAAJ&hl=sr>



## Education

<b>Ph.D. degree (2013 – present)</b>	University of Belgrade - School of Electrical Engineering, Department: Signals and Systems, Laboratory for Robotics - ETF Robotics,  Ph.D. field of research: Robotics, modeling and control of compliant robotic systems, physical Human-Robot interaction.  Ph.D. thesis: “Simultaneous Stiffness and Position Control of Robots with Variable Stiffness Actuators”  Mentor: 2013–2016: prof. dr Veljko Potkonjak (retired), 2016 –present: prof. dr Kosta Jovanović.
<b>Masters degree (2012 – 2013)</b>	University of Belgrade - School of Electrical Engineering, Department: Signals and Systems, Laboratory for Robotics - ETF Robotics,  Field: Robotics, Signal Processing, and Control Systems,  Master thesis: “The development of experimental platform for research in robots having compliant joints”,  Mentor: Prof. dr Veljko Potkonjak.
<b>Dipl. Ing. degree (2008 – 2012)</b>	University of Belgrade - School of Electrical Engineering, Department: Signals and Systems,  Field: Signal Processing and Control Systems,  Diploma thesis: “Comparative Analysis of Nonlinear Control Laws on Laboratory Setup Two-Tank System”,  Mentor: Prof. dr Aleksandar Rakić.

<b>Professional training</b>	
<b>Sep. – Nov. 2019</b>	Research visit at the Jožef Stefan Institute in Ljubljana.
<b>28<sup>th</sup> Jan. – 1<sup>st</sup> Feb. 2019</b>	“Sliding Mode Control and Observation” course at the Centrale Supélec in Paris, organized by European Embedded Control Institute.
<b>Nov. – Dec. 2018</b>	Research visit at the Jožef Stefan Institute in Ljubljana.
<b>August 22 – 26, 2016.</b>	IS3 HRC 2016: ITALIAN-SERBIAN SUMMER SCHOOL ON HUMAN-ROBOT COWORKING - Master Classes on Human-Robot Coworking and Advanced Robotic Grasping
<b>Experience/Career/Projects</b>	
<b>April 2020 –</b>	“Mechanical Impedance Estimation and Planning for the Next Generation Collaborative Robots“, a project funded by Science Fund of the Republic of Serbia
<b>Jan. 2018 – Dec. 2019</b>	“Establishing new tools to facilitate new generation humanoid robot capabilities for collaborative human-robot object manipulation”: Serbian-Slovenian bilateral project between the University of Belgrade - School of Electrical Engineering and Jožef Stefan Institut in Ljubljana. The project is funded by the Serbian Ministry of Education, Science and Technological Development and Slovenian Research Agency.
<b>January 2017 – present</b> <b>Research Assistant</b> (Nov. 2013. – Dec. 2016. Ph.D. student scholarship)	“Research and development of Ambient Intelligent Service Robots of Anthropomorphic Characteristics”, a project funded by Serbian Ministry of Education, Science and Technological Development
<b>September 2012</b>	Internship in Eling DOO, Loznica, Serbia
<b>24<sup>th</sup> Sept. – 15<sup>th</sup> Oct. 2012.</b>	Serbian Center for the Promotion of Science, “Days of Future: Robotics”: Robot workshops and exhibition organization ( <a href="http://danibuduenosti.rs/">http://danibuduenosti.rs/</a> ).
<b>Research Interests</b>	
<b>Robotics</b>	Modeling and control of robotic systems. Compliant robots, Antagonistic tendon driven robots, physical Human-Robot interaction.
<b>Control Systems</b>	Mechatronic system identification, robust and nonlinear control.
<b>Awards and Scholarships</b>	
<b>2019.</b>	Best student paper award at The 28 <sup>th</sup> International Conference on Robotics in Alpe-Adria-Danube Region (RAAD 2019), Kaiserslautern, Germany.
<b>2019.</b>	Best paper award at The 6 <sup>th</sup> International Conference on Electrical, Electronic and Computing Engineering (IcETRAN 2019), in the robotics section, Silver Lake, Serbia.
<b>2016.</b>	Best paper award at The 3 <sup>rd</sup> International Conference on Electrical, Electronic and Computing Engineering (IcETRAN 2016), in the robotics section, Zlatibor, Serbia.
<b>2016. (2015, 2014)</b>	Scholarships for students of doctoral academic studies funded by Ministry of Education, Science and Technological Development of the Republic of Serbia.
<b>2016. (2015, 2014)</b>	The city's annual awards for the best students by the city of Loznica.
<b>2009.</b>	Dositeja - Fund for Young Talents of the Republic of Serbia: Award for high school students for the achievements in competitions in the country and abroad.

<b>2008.</b>	Commendation from HRH Prince Aleksandar Karadjordjević II as the best student in High School.
<b>2000. – 2008.</b>	Awards from the competition in Math, Programming, Fundamental of Electrical Engineering and Electronics in Elementary and High School
<b>Student's projects</b>	
<b>Robotics</b>	CNC machines - programming and product design, programming the movement of the robotic manipulator on a production line.
<b>Industrial Process Control</b>	Water Distribution System, Drying System, AC motor position/velocity control using the frequent regulator. Programming of PLCs and SCADA applications.
<b>Embedded Systems</b>	DC motor control, data acquisition, and processing using <i>National Instruments</i> cRIO 9074 and LabVIEW.
<b>Publications</b>	
<b>Journals with impact factor:</b>	1. <b>Lukić B</b> , Jovanović K and Šekara TB (2019) Cascade Control of Antagonistic VSA—An Engineering Control Approach to a Bioinspired Robot Actuator. <i>Front. Neurobot.</i> 13:69. DOI: <a href="https://doi.org/10.3389/fnbot.2019.00069">10.3389/fnbot.2019.00069</a>
<b>Journals without impact factor:</b>	1. Nikola Knežević, <b>Branko Lukić</b> , Kosta Jovanović, Leon Žlajpah, Tadej Petrič. "End-effector Cartesian stiffness shaping-sequential least squares programming approach". <i>Serbian Journal of Electrical Engineering</i> Vol. 18, No. 1 pp.1-14. DOI: <a href="https://doi.org/10.2298/SJEE2101001K">10.2298/SJEE2101001K</a> 2. Kosta Jovanović, <b>Branko Lukić</b> , and Veljko Potkonjak. "Feedback Linearization for Decoupled Position/Stiffness Control of Bidirectional Antagonistic Drives." <i>Facta Universitatis, Series: Electronics and Energetics</i> Vol. 31, No 1, (March 2018): 51-61.
<b>Conferences:</b>	1. <b>Branko Lukić</b> , Kosta Jovanović, Nikola Knežević, Leon Žlajpah, Tadej Petrič (2020, June). Maximizing the End-Effector Cartesian Stiffness Range for Kinematic Redundant Robot with Compliance. In <i>International Conference on Robotics in Alpe-Adria Danube Region</i> (pp. 208-217). Springer, Cham. 2. <b>Branko Lukić</b> , Tadej Petrič, Kosta Jovanović and Leon Žlajpah, "KUKA LWR Robot Cartesian Stiffness Control Based on Kinematic Redundancy." <i>International Conference on Robotics in Alpe-Adria Danube Region</i> . Springer, Cham, 2019. 3. Nikola Knežević, <b>Branko Lukić</b> , and Kosta Jovanović. "Feedforward Control Approaches to Bidirectional Antagonistic Actuators Based on Learning." <i>International Conference on Robotics in Alpe-Adria Danube Region</i> . Springer, Cham, 2019. 4. Nikola Knežević, <b>Branko Lukić</b> , Kosta Jovanović, Tadej Petrič and Leon Žlajpah. "End-Effector Cartesian Stiffness Optimization: Sequential Quadratic Programming Approach", <i>The 5th International Conference on Electrical, Electronic and Computing Engineering (IcETRAN 2019)</i> , Silver Lake, Serbia, Jun 3-5, 2019. 5. <b>Branko Lukić</b> , Kosta Jovanović, and Tomislav B. Šekara. "Cascade Control Design for Antagonistic Robot Joint Based on ARX Model Characterization." <i>The 5<sup>th</sup> International Conference on Electrical, Electronic</i>

and Computing Engineering (IcETRAN 2018), Palić, Serbia, June 11 – 14, 2018.

6. **Branko Lukić**, Kosta Jovanović, and Tomislav B. Šekara. “Cascade Gain Scheduling Control of Antagonistic Actuators Based on System Identification.” International Conference on Robotics in Alpe-Adria Danube Region. Springer, Cham, 2018.
7. **Branko Lukic**, Kosta Jovanovic, Goran Kvašček, “Feedforward Neural Network for Controlling Qbmove Maker Pro Variable Stiffness Actuator”, The 13<sup>th</sup> Symposium on Neural Networks Applications in Electrical Engineering (NEUREL 2016), Belgrade, Serbia, Sep. 2016., pp 67-70.
8. **Branko Lukić** and Kosta Jovanović. “Minimal Energy Cartesian Impedance Control of Robot with Bidirectional Antagonistic Drives.” International Conference on Robotics in Alpe-Adria-Danube Region. Springer, Cham, 2016.p. 56-64.
9. **Branko Lukić**, Kosta Jovanović, Aleksandar Rakić, “Realization and Comparative Analysis of Coupled and Decoupled Control Methods for Bidirectional Antagonistic Drives: QBmove maker pro”, The 3<sup>rd</sup> International Conference on Electrical, Electronic and Computing Engineering (IcETRAN 2016), Zlatibor, Serbia, Jun 13-16, 2016.
10. Kosta Jovanović, **Branko Lukić**, “Enhanced Puller-Follower Approach for Stiffness Control of Antagonistic Drives”), The 3<sup>rd</sup> International Conference on Electrical, Electronic and Computing Engineering (IcETRAN 2016), Zlatibor, Serbia, Jun 13-16, 2016.
11. **Branko Lukić**, Kosta Jovanović, “Influence of Mechanical Characteristics of a Compliant Robot on Cartesian Impedance Control Design”, The 2<sup>nd</sup> International Conference on Electrical, Electronic and Computing Engineering (IcETRAN 2015), Silver Lake, Serbia, Jun 8-11, 2015.
12. Veljko Potkonjak, **Branko Lukić**, Zaviša Gordić, Predrag Milosavljević, “Development of Experimental Platform for Research in Robots Having Compliant Joints”, The 1<sup>st</sup> International Conference on Electrical, Electronic and Computing Engineering (IcETRAN 2014), Vrnjačka Banja, June 2014.
13. Z. Gordić, **B. Lukić**, M. Lazarević, “Primena modifikovanog relejnog eksperimenta na sistemu sa dva rezervoara u cilju njegove karakterizacije i projektovanje optimalnog PID regulatora”, INFOTEH-Jahorina, Vol 12, March 2013, pp 1187-1191.
14. M. Lazarević, Z. Gordić, **B. Lukić**, “Primena numeričkih metoda inverzne Laplasove transformacije u rešavanju jedne klase parcijalnih diferencijalnih jednačina fizičkih procesa “, INFOTEH-Jahorina, Vol 12, March 2013, pp 1191-1195.

#### Activities

Oct. 2013. - present	Member of the ETF Robotics research group ( <a href="http://robot.etf.rs">http://robot.etf.rs</a> )
2004.– 2008.	Member of Regional Center for Talents in Loznica, Serbia

#### Other skills

Languages:	English
Computer and programming skills:	Matlab, Simulink, C/C++, LabVIEW