University of Belgrade - Faculty of Mechanical Engineering
Department of Production Engineering
Head of Robotics and Artificial Intelligence Laboratory (ROBOTICS & AI)
Proposed Role: **Expert for production technologies – mechanical engineering**
E-mail: zmiljkovic@mas.bg.ac.rs
Mobile: +381 62 295 300

1. **Family name:** **Miljković**
2. **First name:** **Zoran**
3. **Date of birth:** **August 25, 1961**
4. **Nationality:** **Serbian**
5. **Marital status:** **married**
6. **Education:** **PhD**

Institution [Dates]	Degree(s) or Diploma(s) obtained
University of Belgrade - Faculty of Mechanical Engineering; 2000	Doctor of technical science (PhD-Mech.Eng.)
University of Belgrade - Faculty of Mechanical Engineering; 1994	Magister Scientiae – MSc-Mech.Eng. (four semesters & thesis-research prerequisite to PhD)
University of Belgrade - Faculty of Mechanical Engineering; 1988	Dipl.-Ing. (ten semesters with diploma work)

7. **Language skills: (1 to 5 (1 = excellent; 5 = poor))**

Language	Reading	Speaking	Writing
Serbian	1	1	1
English	1 (C1)	2 (C1)	2 (C1)
German	4 (A1)	5 (A1)	5 (A1)

8. **Membership of professional bodies:** JUPITER-Serbia; A.M.S.E.- Association for the Advancement of Modelling and Simulation Techniques in Enterprises (France-Spain)

9. **Other skills:**
   - Excellent knowledge *of Microsoft Office* PC package;
   - Industrial robots programming;
   - Experience in educational activities: "Curriculum Development and ECTS at the University of Belgrade – Faculty of Mechanical Engineering";
   - External expert (2006-2023) assisting to „Research Executive Agency - REA" (Established by European Commission);
   - Evaluator of *Tempus* and *Erasmus Mundus* proposals (2009-2013) within the „EACEA/07 – Executive Agency" (Established by European Commission – Brussels).

10. **Present position:** Full Professor – University of Belgrade, Faculty of Mechanical Eng.

11. **Years within the firm:** 33 years

12. **Key qualifications:**

- **Development of artificial neural network systems for intelligent manufacturing**
- **Design of educational mobile robots**
- **Industrial robots programming in flexible and agile manufacturing systems**
- **Machine learning in autonomous robotic systems**
- **Process planning in metalworking industry**
- **Design of factories and plants in metalworking industry**
- **Design of intelligent manufacturing systems and processes**
- **Analysis of technological possibilities of production systems**

13. **Specific experience in the region:**

Country	Dates
o **Montenegro** – Analysis of technological possibilities in Radoje Dakić AD, Podgorica ("Deloitte")	December, 2004.

14.   Professional experience:

Dates	Location	Company	Position
1 November 1988 – 15 January 1989	Belgrade	Technical centre - "Radoje Dakić"	Technical subjects teacher

Description: Subjects – Engineering drawing; Description geometry

Dates	Location	Company	Position
16 January 1989 – 31 January 1990	Pančevo - Belgrade	Minel - food equipment	Designer - constructor of food equipment

Description: Design of equipment for bakery and confectionery industry in Pančevo, Soko Štark in Belgrade, Ravanica in Ćuprija, Banini in Kikinda.

Dates	Location	Company	Position
1 February 1990 – present	Belgrade	University of Belgrade - Faculty of Mechanical Engineering	Full Professor (10 November 2010 - present)

Description:

Courses

- Manufacturing technology (undergraduate studies – BSc & E-learning course in English (BSc) within *Moodle* software)
- Computer simulation & artificial intelligence (undergraduate studies – BSc)
- Industrial robots (graduate studies – MSc)
- Robotics & artificial intelligence (graduate studies – MSc)
- Machine learning of intelligent robotic systems (graduate studies – MSc)
- Intelligent manufacturing systems (graduate studies – MSc and in English incl. E-learning within *Moodle* software)
- Decision-making methods (graduate studies – MSc course in Serbian and in English incl. E-learning within *Moodle* software)
- Autonomous systems & machine learning (postgraduate studies – PhD)
- Systems of artificial neural networks (postgraduate studies – PhD)
- Cognitive robotics (postgraduate studies – PhD)
- Planning, performing and controlling projects (postgraduate studies – PhD in English)
- Artificial intelligence & machine learning (postgraduate studies – PhD in English)
- Competitive manufacturing management (postgraduate studies – PhD in English)
- Advanced manufacturing systems (postgraduate studies – PhD in English)

International projects

- TEMPUS JEP 40069-2005 *"Multidisciplinary Studies of Design in Mechanical Engineering"* (Technische Universitaet Carolo-Wilhelmina Braunschweig-Germany, Friedrich-Alexander–Universitaet Erlangen-Nuernberg – Erlangen-Germany, University of Belgrade, MATMEC – University of Bologna-Italy, University of Kragujevac), 2006–2008
- 144856-TEMPUS-2008-RS-JPGR *"International Accreditation of Engineering Studies"* (Technical University Munich-Germany, Karlsruhe Institute of Technology-Germany, ASIIN e.V.-Germany, Politechnical University of Catalonia, Barcelona-Spain, Imperial College London-Great Britain, Robotina d.o.o.-Slovenia, German University in Cairo – GUC-Egypt, University of Belgrade-Serbia, University of Kragujevac-Serbia, University of Niš-Serbia, Ministry of Education-Serbia, Institute „Mihajlo Pupin"-Serbia, Informatika d.o.o.-Serbia, IvDam Process Control d.o.o.-Serbia), 2009–2012

CURRICULUM VITAE

Prof. Dr. Zoran Miljković has been working, besides scientific and educational activities, on a significant projects in the field of metalworking industry development in Serbia and Montenegro, and the most important are:

- o Development of automated warehouses – factory Zmaj, Belgrade
- o Layout design of the factory for spare parts production (technological project) – Company RTB Bor
- o Development of robotized cell for arc-welding in Goša-Smederevska Palanka
- o Development of industrial robots and packaging systems for food industry – Company Ivo Lola Ribar, Belgrade
- o Engineering knowledge transfer from university to industry – Milan Blagojević factory in Smederevo
- o Analysis of technological possibilities – IMK 14th OKTOBAR, Kruševac ("Deloitte")
- o Layout design of the plant for *Siemens* electro-cupboard production (technological project) – Montprojekt, Belgrade
- o Process planning (sheet-metal forming; welding; assembly; etc.) in BUCK enterprise (technological project), Belgrade
- o Implementation of intelligent manufacturing systems in sheet-metal production (technological project) – FMP, Belgrade
- o Deep machine learning and swarm intelligence-based optimization algorithms for control and scheduling of cyber-physical systems in Industry 4.0 - MISSION4.0 (scientific project) – The Science Fund of the Republic of Serbia, Belgrade

15. Other relevant information:

- He is cited 1143 times (h-index = 17, source **Scopus**), and 2083 times (h-index = 23, i10-index = 36, source **Google Scholar**).
- His ranking within the "**World Scientist and University Rankings 2023**" is available at this link: https://www.adscientificindex.com/scientist/zoran-miljkovic/1147139
- He is an **external expert** (2006-2023) assisting to "Research Executive Agency - REA" and "DG CNECT" (Established by European Commission).
- He is a Chairperson for the Council of Mechanical Engineering and Industrial Software within the Ministry of Education, Science and Technological Development of the Republic of Serbia (2022-2026).
- He was an **evaluator** of **ESMERA-SOCE_European SMEs Robotics Applications** proposals (2020). He was an **evaluator** of the **TRINITY proposed projects** (2021).
- He was an **evaluator** of *Tempus* and *Erasmus Mundus* proposals (2009-2013) within the "EACEA/07–Executive Agency" established by European Commission in Brussels. He was selected for *Erasmus Mundus Action 2 - Partnerships* proposals in April 2010 – EACEA/P4/JF/rs/D (2010) 302098.
- Prof. Dr. Zoran Miljković was a **member of the expert jury** at the International Belgrade Fair of Modern Educational Means and Equipment in 1999, 2002, 2003, 2005, 2007, 2008, 2010, and in 2001, 2004, 2009, 2011, 2012, 2013, 2014 was a **chairman of the jury**.
- He is **a peer reviewer** for a number of scientific ISI-JCR-SCI **Journals**: *Artificial Intelligence for Engineering Design, Analysis and Manufacturing*; *Expert Systems with Applications*; *Journal of Intelligent and Robotic Systems*; *International Journal of Advanced Robotic Systems*; *Engineering Applications of Artificial Intelligence*; *Robotica*; *Robotics and Autonomous Systems*; *Applied Soft Computing*; *Applied Mathematical Modelling*; *The International Journal of Advanced Manufacturing Technology*; *International Journal of Production Research*; *Materials and Manufacturing Processes*; *Proc.of the Institution of Mech. Eng. Part B: Journal of Engineering Manufacture*; *etc*.
- He is an **independent reviewer for curricula development** at the secondary technical schools of Serbia within the Center for educational policy.
- He was the **University representative and lecturer**: NEW CURRICULA AND COURSES AT THE FACULTY OF MECHANICAL ENGINEERING OF THE UNIVERSITY OF BELGRADE, "Curriculum Development and ECTS Seminar" – Plenary Session, Organized by **World University Service** (WUS) – Austrian Committee (Head Office Graz, Heinrichstrasse 39, A-8010 Graz, http://www.wus-austria.org; Local Office in Belgrade, Ohridska 11); Held on 7th June 2006, Budva, Montenegro.
- He was a **correspondent** for *Empirica Gesellschaft für Kommunikations- und Technologieforschung mbH* – **Bonn, Germany** (supported by European Commission) within the project titled "**Knowledge Transfer Study: correspondent services for the Republic of Serbia**", March 2011.
- He was a supervisor of four PhD students, two Magister Scientiae students-research prerequisite to PhD studies and he is a supervisor of five actual PhD students.

16. Published books and papers:

Prof. Dr. Zoran Miljković is an author or co-author of four books, more than 190 scientific papers and chapters (https://machinery.mas.bg.ac.rs/), published in journals, monographs and proceedings of conferences in the country and abroad, within domains of Intelligent Manufacturing Systems and Processes, Industrial Robotic Systems, Mobile Robotics, Visual Servoing and Image Processing, Intelligent Robotic Control, Machine Learning, Artificial Neural Networks and Co-creative Decision-making.

He is also an author of more than 30 software packages and applications, technical solutions, methodologies, machine learning algorithms for autonomous mobile robots, etc.

CURRICULUM VITAE

Professor Miljković was a team leder (Principal Investigator) of many projects, and the last one is a scientific project titled MISSION4.0 (http://mission4-0.mas.bg.ac.rs/) in domain of artificial intelligence development financed by The Science Fund of the Republic of Serbia (September 1st, 2020 - December 31st, 2022).

Published achivements are:

BOOKS

1. Kalajdžić,M.(editor),Tanović,Lj.,Babić,B.,Glavonjić,M.,Miljković,Z., et al.,
   CUTTING TECHNOLOGY, Handbook (IX edition - ISBN 978-86-6060-097-6), LXXIX+453 p., University of Belgrade - Faculty of Mechanical Engineering, 1998 (I edition), 1999 (II edition), 2001 (III edition), 2004 (IV edition), 2006 (V edition), 2008 (VI edition), 2012 (VII edition), 2017 (VIII edition), 2021 (IX edition).

2. Miljković,Z., **SYSTEMS OF ARTIFICIAL NEURAL NETWORKS IN PRODUCTION TECHNOLOGIES**, Series **Intelligent Manufacturing Systems**, Vol. 8, Scientific monograph (ISBN 86-7083-455-3), VI+185 p., University of Belgrade, Faculty of Mechanical Engineering, 2003.
   The scientific monograph "Systems of Artificial Neural Networks in Production Technologies" won the prize "St. Sava" for the best book issued at the Faculty of Mechanical Engineering in 2003.

3. Miljković,Z., Aleksendrić,D., **ARTIFICIAL NEURAL NETWORKS – solved examples with short theory background**, Textbook (I edition - ISBN 978-86-7083-685-3 & II edition - ISBN 978-86-7083-961-8), VI+225 p., University of Belgrade - Faculty of Mechanical Engineering, 2009 (I edition), 2018 (II edition).
   The textbook "ARTIFICIAL NEURAL NETWORKS – solved examples with short theory background" won the prize "St. Sava" for the best book issued at the Faculty of Mechanical Engineering in 2009.

4. Miljković,Z., Petrović,M., **INTELLIGENT MANUFACTURING SYSTEMS – with robotics and artificial intelligence backgrounds**, Textbook (ISBN 978-86-6060-071-6), XXVIII+409 p., University of Belgrade - Faculty of Mechanical Engineering, 2021 (I edition).

DIPLOMA WORK

Miljković,Z., *Warehousing Automation System*, Diploma work (Dipl.-Ing. in Production Engineering), University of Belgrade, Faculty of Mechanical Engineering, Belgrade, SFR Yugoslavia, 1988.

MAGISTER SCIENTIAE THESIS

Miljković,Z., *Research and Development of Microrobot for Assembly of Mechatronic Fits*, Magister Scientiae thesis - Professional Doctoral degree/MD in Production Engineering, University of Belgrade, Faculty of Mechanical Engineering, Belgrade, FR Yugoslavia, 1994.

DOCTORAL DISSERTATION

Miljković,Z., *Development of Control Algorithms for Autonomous Industrial Robots Based on the Recognition System and Learning*, Doctoral dissertation - Research Doctoral degree/PhD in Mechanical Engineering, University of Belgrade, Faculty of Mechanical Engineering, Belgrade, FR Yugoslavia, 2000.

PAPERS

[1] Miljković,Z., Milutinović,D., Kokotović,B., **Trajectory Accuracy of Industrial Robots**, 17th JUPITER Conference, 13th Yugoslav Symposium "NC-ROBOTS-FMS", Proceedings (in Serbian), pp. 45-52 (COBISS.SR-ID - 513569699), Kopaonik, Yugoslavia, 1991.

[2] Miljković,Z., Milošević,Lj., **Development of Robotic Cells for Arc Welding**, 18th JUPITER Conference, 14th Yugoslav Symposium "NC-ROBOTS-FMS", Proceedings (in Serbian), pp. 115-124, Kopaonik, Yugoslavia, 1992.

[3] Milačić,V., Miljković,Z., **Nanotechnology, Artificial Life and Insect Robot - New Challenge for Engineers**, 19th JUPITER Conference, 15th Yugoslav Symposium "NC-ROBOTS-FMS", Proceedings (in Serbian), pp. 77-82 (COBISS.SR-ID - 513389987), Prohor Pčinjski, Yugoslavia, 1993.

[4] Miljković,Z., Stanić,J., **Multicriteria Optimization Model of Robot Arm with Counterweight Balancing**, 19th JUPITER Conference, 15th Yugoslav Symposium "NC-ROBOTS-FMS", Proceedings (in Serbian), pp. 89-94 (COBISS.SR-ID - 513389987), Prohor Pčinjski, Yugoslavia, 1993.

[5]   Stanić,J., Miljković,Z., **Optimization of Hydraulic Spring Mechanism for Industrial Robots Balancing**, 1st International Conference on HEAVY MACHINERY, Proceedings (in Serbian), pp. 102-107 (COBISS.SR-ID - 63233289), Kruševac-Vrnjačka Banja, Yugoslavia, 1993.

[6]   Milačić,V., Miljković,Z., **Artificial Life and Insect Robot**, INFO – Journal for Informatics, Computers and Telecommunication (in Serbian), Vol. 3/93,   pp. 15-17, Belgrade, Yugoslavia, 1993.

[7]   Miljković,Z., Milačić,V., **Mechatronic Approach to Manufacturing Technologies,** The 5th International Conference MMA94 - FLEXIBLE TECHNOLOGIES, Proceedings (in Serbian), pp. 413-418, Novi Sad, Yugoslavia, 1994.

[8]   Miljković,Z., Milačić,V., **Development of Intelligent Autonomous Microrobots,** 20th JUPITER Conference, 16th Yugoslav Symposium "NC-ROBOTS-FMS", Proceedings (in Serbian), pp. 41-48 (COBISS.SR-ID - 513387939), Belgrade, Yugoslavia, 1994.

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[12]   Miljković,Z., Milačić,V., **Research and Development of the Intelligent Autonomous Microrobot for Assembly of Mechatronic Fits,** Proceedings of the First World Congress on Intelligent Manufacturing Processes & Systems, Vol. 1, pp. 310-318, Mayagüez, Puerto Rico, 1995.

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[14]   Aračić,B., Miljković,Z., **Cycle Time Analysis of Double-Armed Robot RPD 1.25 by Application of RTM Method - Analytical and Experimental,** 22nd JUPITER Conference, 18th Yugoslav Symposium "NC-ROBOTS-FMS", Proceedings (in Serbian), pp. 3.87-3.92 (COBISS.SR-ID - 513370787), Belgrade, Yugoslavia, 1996.

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[25]   Miljković,Z., Babić,B., **Adaptive Behaviour of Autonomous Mobile Robot Based on Heterogeneous Neural Networks**, Proceedings printed in *Advances in Systems, Signals, Control and Computers,* Vol. III, pp. 129-133, **IAAMSAD and the South African branch of the Academy of Nonlinear Sciences** (ISBN 0-620-23136-X), Durban, South Africa, 1998.

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Statement of data accuracy

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With this I confirm that these are my true qualifications, knowledge and experience.   Date: April   6th,   2023

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