Dr Dušan Nedeljković

Personal data

Address:
University of Belgrade
Faculty of Mechanical Engineering,
Kraljice Marije 16,
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+381 65 9710 269

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dnedeljkovic@mas.bg.ac.rs

Nationality:
Serbian

Date of birth:
December 03, 1992

Research or academic title

Teaching assistant

Research field/area

Mechanical engineering / Manufacturing Automation, Cybersecurity, Machine Learning, Cyber Physical Systems, Industrial Internet of Things, Distributed Control

Languages

Serbian, English

Number of citations (excluded self-citations, source: Scopus)

36

Hirsch index (excluded self-citations, source: Scopus)

2

Education

2023 **Doctor of technical sciences (PhD – Mech. Eng.)**
University of Belgrade - Faculty of Mechanical Engineering,
Department of Production Engineering
Dissertation title: Detection of cyber-attacks on systems for manufacturing equipment control

2016 **Master of Science – MSc (four semesters)**
University of Belgrade - Faculty of Mechanical Engineering,
Department of Production Engineering
Thesis title: Human Machine Interface (HMI) for selected manufacturing resources

2014 **Bachelor of Science – BSc (six semesters)**
University of Belgrade - Faculty of Mechanical Engineering

Employment

Jan 2018-Present **Teaching assistant (since January 2018)**
University of Belgrade - Faculty of Mechanical Engineering,
Department of Production Engineering
Laboratory for Manufacturing Automation

2016-2018 **Mechanical engineer**
Servoteh d.o.o. Belgrade

Experience in competitive public calls in previous 5 years

MISSION4.0

Project name: *Deep machine learning and swarm intelligence-based optimization algorithms for control and scheduling of cyber-physical systems in Industry 4.0 - MISSION4.0*, Grant: 6523109

Funding source: Science Fund of the Republic of Serbia

Implementation period: 2020-2022.

Awarded grant amount: 199,949.18 EUR

Project PI: Zoran Miljković

Role of Dušan Nedeljković: Team Member

KEY RESULTS OF MISSION 4.0:

Journal papers:

4. **Nedeljkovic, D.**, Jakovljevic, Z., **CNN based method for the development of cyber-attacks detection algorithms in industrial control systems,** Computers and Security, Vol. 114, paper no. 102585, 2022, ISSN: 0167-4048, DOI:10.1016/j.cose.2021.102585,

Other information

Reviewer in scientific journals: Computers and Security, International Journal of Information Security.

https://www.sciencedirect.com/science/article/pii/S0167404821004089 (Science Citation Index-Web of Science® – IF = 5.6 (2022) → M21; source KoBSON) **Relevant Publication for MCSecurity**

5. **Nedeljković, D.**, Jakovljević, Ž., Miljković, Z., Pajić, M., **Detection of cyber-attacks in systems with distributed control based on support vector regression**, Telfor Journal, Vol. 12, No. 2, pp. 104-109, 2020, ISSN 1821-3251, eISSN 2334-9905, DOI: 10.5937/telfor2002104N, http://journal.telfor.rs/Published/Vol12No2/Vol12No2_A6.pdf **Relevant Publication for MCSecurity**

Conference papers:

6. **Nedeljković, D.**, Jakovljević, Ž., **GAN-based Data Augmentation in the Design of Cyber-attack Detection Methods**, In 9th International Conference on Electrical, Electronics and Computing Engineering (IcETRAN 2022), pp. 651-656 (ISBN: 978-86-7466-930-3), Novi Pazar, Serbia, 6-9 June 2022, https://www.etran.rs/2022/zbornik/CD-ZBORNIK_ETRAN_22.pdf
7. Jakovljević, Ž., **Nedeljković, D.**, **Cyber security in continuous-time controlled systems – overview of the results within the project of MISSION4.0**, 43rd JUPITER Conference, Proceedings – CD (in Serbian), pp. 1.07-1.16, Belgrade, Serbia, 4-5 October, 2022, http://cent.mas.bg.ac.rs/jupiter/zbornik_2022.pdf
8. Jakovljevic, Z., **Nedeljkovic, D.**, **Distribution of Control Tasks to Smart Devices in Industrial Control Systems: a Case Study**, In 8th International Conference on Electrical, Electronics and Computing Engineering (IcETRAN 2021), pp. 585-590 (ISBN: 978-86-7466-894-8), Stanišići, Bosnia and Herzegovina, 8-10 September 2021, https://www.etran.rs/2021/zbornik/Proceedings/Zbornik_Proceedings.pdf
9. **Nedeljković, D.**, Jakovljević, Ž., **Implementation of CNN based algorithm for cyber-attacks detection on a real-world control system**, In 14th International Scientific Conference MMA 2021 – Flexible Technologies, pp. 119-122 (ISBN 978-86-6022-364-9), Novi Sad, Serbia, 23-25 September 2021, http://www.mma.ftn.uns.ac.rs/files/MMA2021-PROCEEDINGS.pdf **Relevant Publication for MCSecurity**
10. **Nedeljković, D.**, Stanojević, S., Puzović, R., Jakovljević, Ž., **Integration of production resources into the Manufacturing Execution System using OPC-UA**, In 13th ETIKUM conference (in Serbian),

pp. 65-68 (ISBN 978-86-6022-387-8), Novi Sad, Serbia, December 2021 (M63).

11. Jakovljevic, Z., **Nedeljkovic, D.**, **Cyber Physical Systems in Manufacturing Engineers Education**, In 11th International Conference on Machine and Industrial Design in Mechanical Engineering, Scopus indexed book of the Springer Series Mechanisms and Machine Science, with the title Machine and Industrial Design in Mechanical Engineering – Proceedings of KOD 2021, pp. 735-743 (eISBN: 978-3- 030-88465-9), DOI: 10.1007/978-3-030-88465-9, https://www.springer.com/gp/book/9783030884642, 2021
12. Jakovljević, Ž., **Nedeljković, D.**, Ševarlic, F., Puzović, R., **Communication between manufacturing resources using OPC-UA standard**, In 42th JUPITER Conference, Proceedings – CD (in Serbian), pp. 4.1-4.12 (ISBN 978-86-6060-055-6), Belgrade, Serbia, 6-7 October 2020, http://cent.mas.bg.ac.rs/jupiter/zbornik_2020.pdf
13. **Nedeljković, D.**, Jakovljevic, Ž., Miljković, Z., **Image classification based on convolutional neural networks**, In 42th JUPITER Conference, Proceedings – CD (in Serbian), pp. 4.13-4.23 (ISBN 978-86- 6060-055-6), Belgrade, Serbia, 6-7 October 2020, http://cent.mas.bg.ac.rs/jupiter/zbornik_2020.pdf
14. **Nedeljković, D.**, Jakovljevic, Ž., **Cyber-attack detection method based on RNN**, In 7th International Conference on Electrical, Electronics and Computing Engineering (IcETRAN 2020), pp. 726-731 (ISBN 978-86-7466-852-8), Belgrade, Serbia, 28-29 September 2020, https://www.etran.rs/2020/ZBORNIK_RADOVA/Zbornik_book/Zbornik_tekst_outlines_komplet_min.pdf
15. **Nedeljković, D.**, Jakovljević, Ž., **Integration of Smart Vision Sensor into Manipulator Control System using OPC-UA**, In 28th Telecommunications Forum (TELFOR 2020), (ISBN 978-0-7381-4244-9, eISBN 978-0-7381-4243-2), Belgrade, Serbia, 24-25 November 2020, https://ieeexplore.ieee.org/abstract/document/9306524

Technical solutions:

16. **Nedeljković, D.**, Jakovljevic, Ž., **Deep learning based cyber-attack detection algorithm for energy-limited cyber-physical systems** (In Serbian), Technical solution, January 2022 **Relevant Algorithm for MCSecurity**

Datasets:

17. **Nedeljković, D.**, Jakovljević, Ž., **New datasets obtained from experimental installations with centralized control** (Version v.2.0) [Data set]. Zenodo, http://doi.org/10.5281/zenodo.5514351, 2021. **Relevant Dataset for MCSecurity**

Additional 2 publications relevant for MCSecurity (3 are listed as key references 1, 2 and 6 of MISSION4.0)

1. **Nedeljković, D.**, Jakovljević, Ž., **Generation of lightweight models for cyber-attacks detection algorithms using knowledge distillation**, In 39th International Conference on Production Engineering of Serbia (ICPES 2023), pp. 24-31 (ISBN 978-86-6022-610-7), Novi Sad, Serbia, 26-27 October 2023, http://spms.fink.rs/doc/2023/Zbornik%20SPMS%202023_merged.pdf **Relevant Publication for MCSecurity**

2. **Nedeljković, D.**, Jakovljević, Ž., Miljković, Z., **The detection of sensor signal attacks in industrial control systems**, FME Transactions, Vol. 48, No. 1, pp. 7-12, 2020, ISSN: 14512092, DOI: 10.5937/fmet2001007N, https://www.mas.bg.ac.rs/_media/istrazivanje/fme/vol48/1/2_d_nedeljkovic_et_al.pdf **Relevant Publication for MCSecurity**

Additional 2 projects relevant for MCSecurity

2018 - 2019 Babić, B., Miljković, Z., Jakovljević, Ž., **Nedeljković, D.**, et al. ***An Innovative, Ecologically Based Approach to the Implementation of Intelligent Manufacturing Systems for the Production of Sheet Metal Parts***, Grant: TR-35004, Project funded by Ministry of Education, Science and Technological Development of the Government of the Republic of Serbia

2020–2023 Popović, V., Babić, B., Miljković, Z., Jakovljević, Ž., **Nedeljković, D.**, et al. ***Integrated research in macro, micro, and nano mechanical engineering – Deep learning of intelligent manufacturing systems in production engineering***, Project financed by the Ministry of Education, Science and Technological Development of the Serbian Government, under the contract number 451-03-68/2022-14/200105