

BROJ: 01-17/25

DATUM: 07.01.2025.

**Univerzitet u Sarajevu**  
**Elektrotehnički fakultet**  
**Zmaja od Bosne bb**  
**71000 Sarajevo**

**Vijeću Univerziteta u Sarajevu-Elektrotehnički fakultet**

**Predmet:** Izvještaj o rezultatima i aktivnostima redovnog profesora u posljednjih sedam godina

U periodu od 2018-2024. godine postigao sam sljedeće rezultate u oblasti naučnoistraživačkog rada:

**Radovi u časopisima unutar WoSCC:**

1. Osmanović, A., Uzunović, T., Šabanović, A. & Velagić, J. (2021). "**Disturbance-Observer-Based Control of DFIG in Island Mode for Microgrid Applications**," *IEEE Access*, Vol. 9, pp. 149153-149163 (IF JCR 3.476, Q2).
2. Balta, H., Velagić, J., Beglerović, H., De Cubber, G. & Siciliano, B. (2020). "**3D Registration and Integrated Segmentation Framework for Heterogeneous Unmanned Robotic Systems**," *Remote Sensing*, Vol. 12, No. 10, pp. 1-40, (IF JCR 5.349, Q1).
3. Zelenika, S., Hadas, Z., Bader, S., Becker, T., Guljušić, P., Hlinka, J., Velagić, J. & Vrcan, Z. (2020). "**Energy harvesting technologies for structural health monitoring of airplane components—a review**," *Sensors*, Vol. 20, No. 22, pp. 6685-6742, (IF JCR 3.847, Q1).
4. Velagić, J., Vuković, L. & Ibrahimović, B. (2020). "**Mobile Robot Motion Framework Based on Enhanced Robust Panel Method**," *International Journal of Control, Automation, and Systems*, Springer, Germany, Vol. 18, No. 5, pp. 1264-1276 (IF JCR 2.964, Q2).

**Radovi na međunarodnim konferencijama koje prate referentne baze:**

1. Špago, H., Osmanović, A. and Velagić, J. (2024). "**Development of Cascaded-Control System for Three-Phase Rectifier**," International Symposium ELMAR, Sep. 11-13, Zadar, pp. 233-236.
2. Velagić, J., Osmanović, A., Rakanović and Batalović, M. (2023). "**Design and Development of Crawling Mobile Robot with 2-DOF Robot Arm**," International Symposium ELMAR, Sep. 11-13, Zadar, pp. 107-111.
3. Velagić, J., Osmanović, A., Rakanović and Batalović, M. (2023). "**Multi-Loop Speed Control System for DC Motor**," International Symposium ELMAR, Sep. 11-13, Zadar, pp. 103-106.
4. Velagić, J., Klovo, V. and Lačević, H. (2022). "**Semantic Visual Segmentation of a Mobile Robot Environment Using Deep Learning Model**," XXVIII International Conference on Information, Communication and Automation Technologies, June 16-18, Sarajevo, Bosnia&Herzegovina, pp. 1-8.
5. Velagić, J. and Balta, H. (2022). "**3D UAV Registration of Large Scale Environment Using Structure From Motion Based Approach**," XXVIII International Conference on Information,

- Communication and Automation Technologies, June 16-18, Sarajevo, Bosnia&Herzegovina, pp. 1-7.
6. Akagić, A., Krivić, S., Dizdar, H. and Velagić, J. (2022). "**Computer Vision with 3D Point Cloud Data: Methods, Datasets and Challenges**," XXVIII International Conference on Information, Communication and Automation Technologies, June 16-18, Sarajevo, Bosnia&Herzegovina, pp. 1-7.
  7. Velagić, J., Čivgin, A., Osmić, N. and Osmanović, A. (2022). "**System for Robust Detection of Pedestrians in Dynamic Environments Based on 3D Range Data**," IEEE Conference on Control, Decision, and Information Technologies, May 17-20, Istanbul, Turkey, pp. 1-6.
  8. Velagić, J., Osmić, N., Klovo, V. and Lačević, H. (2022). "**Design of LQR Controller for 3D Trajectory Tracking of Octocopter Unmanned Aerial Vehicle**," IEEE International Conference on Control, Decision, and Information Technologies, May 17-20, Istanbul, Turkey, pp. 1-6.
  9. Velagić, J., Kovač, I., Panjević, A. and Osmanović, A. (2021). "**Design and Control of Two-Wheeled and Self-Balancing Mobile Robot**," International Symposium ELMAR, Sep. 13-15, Zadar, pp. 77-82.
  10. Omeragić, T. and Velagić, J. (2020). "**Tracking of Moving Object Based on Extended Kalman Filter**," International Symposium ELMAR, September 14-15, Zadar, Croatia, pp. 137-140.
  11. Velagić, J., Osmanović, A., Koluh, D. and Karzić A. (2020). "**Adaptive Control of Hard Disk Drive Servo System**," International Symposium ELMAR, September 14-15, Zadar, Croatia, pp. 91-96.
  12. Pozderac, T., Velagić, J. and Osmanković, D. (2019). "**3D Mapping Based on Fusion of 2D Laser and IMU Data Acquired by Unmanned Aerial Vehicle**," 6th IEEE International Conference on Control, Decision and Information Technologies (CoDIT), April 23-26, Paris, France.
  13. Ražanica, E., Hamzić, A., Osmanković, D. & Velagić, J. and (2019). "**Design of Radiometric Thermography System for Object Recognition**," 6th IEEE International Conference on Control, Decision and Information Technologies (CoDIT), April 23-26, Paris, France.
  14. Osmanović, A., Mašić, Š. & Velagić, J. (2019). "**Decoupled Power Control of SEIG-WECS System Using Nonlinear Flatness-Based Controller**," IEEE International Electric Machines and Drives Conference (IEMDC), May 12-15, San Diego, USA.
  15. Balta, H., Velagić, J., De Cubber, G. & Siciliano, B. (2019). "**Semi-Automated 3D Registration for Heterogeneous Unmanned Robots Based on Scale Invariant Method**," IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR), September, 2-4, Würzburg, Germany, to appear.
  16. Živojević, D. & Velagić, J. (2019). "**Path Planning for Mobile Robot using Dubins-curve based RRT Algorithm with Differential Constraints**," 61th International Symposium ELMAR-2019, September 23-25, Zadar, Croatia, pp. 139-142.
  17. Alagić, E, Velagić, J. & Osmanović, A. (2019). "**Design of Mobile Robot Motion Framework based on Modified Vector Field Histogram**," 61th International Symposium ELMAR-2019, September 23-25, Zadar, Croatia, pp. 135-138.
  18. Balta, H., Velagić, J., Bosschaerts, W., De Cubber, G. & Siciliano, B. (2018). "**Fast Iterative 3D Mapping for Large-Scale Outdoor Environments with Local Minima Escape Mechanism**," 12th IFAC International Symposium on Robot Control (SYROCO), August 27-30, Budapest, Hungary, pp. 298-305.
  19. Balta, H., Velagić, J., Bosschaerts, W., De Cubber, G. & Siciliano, B. (2018). "**Fast Statistical Outlier Removal Based Method for Large 3D Point Clouds of Outdoor Environments**," 12th IFAC International Symposium on Robot Control (SYROCO), August 27-30, Budapest, Hungary, pp. 348-353.



20. Osmanović, A., Velagić J. & Mašić, Š. (2018). "**Nonlinear Flatness-Based Decoupled Power Control of DFIG Wind Turbine System**," 16th IEEE International Conference on Industrial Informatics (INDIN), July 18-20, Porto, Portugal, pp. 686 - 691.
21. Velagić J., Osmić, N., Puščul, B. & Krilašević, S. (2018). "**Identification, Model Validation and Control of an Octorotor Unmanned Aerial Vehicle**," 16th IEEE International Conference on Industrial Informatics (INDIN), July 18-20, Porto, Portugal, pp. 381 - 387.
22. Kasić, A., Velagić J. & Osmanović, A. (2018). "**Design of NMPC-Based Framework for Mobile Robot Motion in Unstructured Environments**," 60th International Symposium ELMAR-2018, September 16-19, Zadar, Croatia, pp. 183 – 186.
23. Jakubović, A. & Velagić, J. (2018). "**Image Feature Matching and Object Detection using Brute-Force Matchers**," 60th International Symposium ELMAR-2018, September 16-19, Zadar, Croatia, pp. 83 - 86.

### Realizirani projekti:

1. "**Napredne strukture upravljanja vjetroagregatom s ciljem povećanja proizvodnje električne energije**", Federalno ministarstvo obrazovanja i nauke, 2017-2018 (uloga: voditelj).
2. "**Razvoj sistema upravljanja konverzijom energije vjetra zasnovanog na FPGA tehnologiji**", Kantonalno ministarstvo nauke i obrazovanja, 2018-2019 (uloga: voditelj).
3. "**Sistem za nadzor i evaluaciju termalne učinkovitosti objekata za rezidencijalnu i komercijalnu upotrebu s ciljem uštede energije**", Fond za zaštitu okoliša, 2019-2020 (uloga: voditelj).
4. "**Robusno upravljanje generatorima u proizvodnji električne energije iz obnovljivih izvora energije**", Federalno ministarstvo nauke i obrazovanja, 2020-2021 (uloga: voditelj).
5. "**Optimising Design for Inspection**", EU COST project CA18203, 2019-2023 (uloga: voditelj BH tima).
6. "**Višedomenski mobilni sistem za 3D mapiranje i inspekciju objekata kulturnog nasljeđa (3DVMS)**", Kantonalno ministarstvo nauke i obrazovanja, 2021-2022 (uloga: voditelj).
7. "**Metode upravljanja konverzijom energije iz obnovljivih izvora u mikromrežama**", Federalno ministarstvo nauke i obrazovanja, 2021-2022 (uloga: voditelj).
8. "**Artificial Intelligence Based Alzheimer's Disease Risk Prediction for Personalized Medicine**", Ministarstvo civilnih poslova BiH, 2022-2023 (uloga: voditelj).
9. "**Optimizacija dizajna za inspekciju komponenti aviona**", Ministarstvo civilnih poslova BiH, 2022-2023 (uloga: voditelj).
10. "**ROBORIZON - Erarbeitung eines Robotik Vorhabens im Rahmen von Horizon Europe**", BMBF-a (Bundesministerium für Bildung und Forschung) Germany, 2022-2023 (voditelj BiH tima).
11. "**Strengthening Research and Innovation Excellence in Autonomous Aerial Systems – AeroSTREAM**", EU HORIZON-WIDERA-2021-ACCESS-05 program, 2022-2025 (uloga: istraživač).
12. "**MARBLE-Joint Master on Maritime Robotics in Blue Economy**", INTERREG V-B Adriatic-Ionian ADRION Programme 2014-2020, 2022-2023 (uloga: istraživač).
13. "**Gradnja kolaborativnog heterogenog robotskog sistema zasnovanog na bežičnoj ad-hoc mreži i daljinskom upravljanju**", Kantonalno ministarstvo nauke i obrazovanja, 2023-2024 (uloga: voditelj).

14. "Razvoj kognitivnog robotskog sistema za planiranje, upravljanje i nadziranje akcija",  
Federalno ministarstvo nauke i obrazovanja, 2023-2024 (uloga: voditelj).

Mentorstvo: završni radovi I ciklusa 11 kandidata, završni radovi II ciklusa 3 kandidata.

Recenziranje velikog broja radova u sljedećim časopisima i konferencijama:

Robotics and Autonomous Systems, Measurement, Mechatronics, Transactions of the Institute of Measurement and Control, IEEE Transactions on Control System Technology, IEEE Transactions on System, Man and Cybernetics - Part B, Vehicle System Dynamics, ISA Transactions, IEEE International Conference on Robotics and Automation, IEEE International Conference on Intelligent Robots and Systems.

Povećanje broja citata u periodu 2018-2024. godine:

Google Scholar: 1000

Scopus: 644

U Sarajevu, 07.01.2025. godine

Prof.  min Velagić