

**Thesis Title:** Advanced distant diagnostics techniques and sensors in sports safety and health condition prediction

**PhD Candidate:** Attila BIRÓ

**Scientific Supervisors:** Prof.Dr. SZILÁGYI Sándor Miklós, Prof.Dr. Antonio I. CUESTA-VARGAS

**Scientific co-Supervisor:** Prof.Dr. Jaime MARTIN-MARTIN

## LISTA DE PUBLICAȚII / PUBLICATION LIST OWN PUBLICATIONS PERTAINING TO THESIS

1. **A. Biró**, A.I. Cuesta-Vargas, and L. Szilágyi. *SRPE and ACWR to control fatigue levels and minimize injuries in performance sports*. In IEEE International Conference on Systems, Man, and Cybernetics (SMC), Special Section Cyber, IEEE, IEEE Xplore, pages 2808–2813, Honolulu, Oahu, HI, USA, **2023**. doi: [10.1109/SMC53992.2023.103943492023](https://doi.org/10.1109/SMC53992.2023.103943492023), **Ranking<sup>1</sup>: B**.
2. **A. Biró**, A.I. Cuesta-Vargas, and S.M. Szilágyi. *Real-time disease and COVID-19 detection pipeline from voice for performance sports*. In IEEE International Conference on Systems, Man, and Cybernetics (SMC), Special Section Cyber, IEEE, IEEE Xplore, pages 2309–2314, Honolulu, Oahu, HI, USA, **2023**. doi: [10.1109/SMC53992.2023.10394396](https://doi.org/10.1109/SMC53992.2023.10394396), **Ranking: B**.
3. **A. Biró**, A.I. Cuesta-Vargas, L. Szilágyi, *Enhanced Spatial-Temporal Analysis for EEG-Based Microsleep Detection: Integrating Kalman Filtering with Voronoi Tessellation and Adaptive Coverage Control*, IEEE International Conference on Systems, Man, and Cybernetics, Special Section Cybernetics (SMC), Special Section Cybernetics, Kuching, Sarawak, Malaysia, **2024**, [Accepted], IEEE Xplore, **Ranking: B**.
4. A.I. Cuesta-Vargas, **A. Biró**, A. Escriche-Escuder, and et al. *Effectiveness of a gamified digital intervention based on lifestyle modification (igame) in secondary prevention: a protocol for a randomised controlled trial*. In BMJ Open, volume 13. BMJ, **2023**. doi: [10.1136/bmjopen-2022-066669](https://doi.org/10.1136/bmjopen-2022-066669), **Rank AIS: Q2(A)<sup>2</sup>, Impact Factor: 3,007**.
5. **A. Biró**, A.I. Cuesta-Vargas, and L. Szilágyi. *AI-Assisted Fatigue and Stamina Control for Performance Sports on IMU-generated Multivariate Times Series Datasets*. Sensors, volume 24(1), 132. MDPI, **2024**. doi: [10.3390/s24010132](https://doi.org/10.3390/s24010132), **Rank AIS: Q2(B), Impact Factor: 3,9**.
6. **A. Biró**, S.M. Szilágyi, L. Szilágyi, J. Martin-Martin, and A.I. Cuesta-Vargas. *Machine Learning on Prediction of Relative Physical Activity Intensity Using Medical Radar Sensor and 3D Accelerometer*. Sensors, volume 23(7), 3595. MDPI, **2023**. doi: [10.3390/s23073595](https://doi.org/10.3390/s23073595), **Rank AIS: Q2(B), Impact Factor: 3,9**.
7. J. Martin-Martin, L. Wang, **A. Biró**, and et al. *The validity of the energy expenditure criteria based on open source code through two inertial sensors*. In Sensors, volume 22(7), 2552, MDPI, **2022**. doi: [10.3390/s22072552](https://doi.org/10.3390/s22072552), **Rank AIS: Q2(B), Impact Factor: 3,9**.

---

<sup>1</sup> The rankings are presented based on the classification of conferences and journals in the field of computer science.

Conference ranking - Source CORE Conference Ranking Portal: <http://portal.core.edu.au/conf-ranks>

Journal ranking (Rank AIS) - Source UEFISCDI: <https://uefiscdi.gov.ro/premierea-rezultatelor-cercetarii-articole> (October, 2022)

<sup>2</sup> BMJ Open placed 6th; according to policy, it is considered and calculated as a higher (A) Rank

8. J. Martin-Martin, A. Jimenez-Partinen, **A. Biró**, I. De-Torres, A. Escriche-Escuder, M. Gonzalez-Sanchez, A. Muro-Culebras, C. Roldan-Jimenez, M. Ruiz-Munoz, F. Mayoral-Cleries, and et al. *Reliability study of inertial sensors LIS2DH12 compared to actigraph GT9X: Based on free code*. Journal of Personalized Medicine, volume 12(5), 749. MDPI, **2022**. doi: [10.3390/jpm12050749](https://doi.org/10.3390/jpm12050749), **Rank AIS: Q2(B), Impact Factor: 3,4**.
9. **A. Biró**, S.M. Szilágyi, and L. Szilágyi. *Optimal Training Dataset Preparation for AI-Supported Multilanguage Real-Time OCRs Using Visual Methods*. Applied Sciences, volume 13, page 13107. MDPI, **2023**. doi: [10.3390/app132413107](https://doi.org/10.3390/app132413107), **Rank AIS: Q3(C), Impact Factor: 2,7**.
10. **A. Biró**, A.I. Cuesta-Vargas, J. Martin-Martin, L. Szilágyi, and S.M. Szilágyi. *Synthesized Multilanguage OCR Using CRNN and SVTR Models for Realtime Collaborative Tools*. Applied Sciences, volume 13(7), 4419. MDPI, **2023**. doi: [10.3390/app13074419](https://doi.org/10.3390/app13074419), **Rank AIS: Q3(C), Impact Factor: 2,7**.
11. **A. Biró**, K.T. Jánosi-Rancz, L. Szilágyi, A.I. Cuesta-Vargas, J. Martin-Martin, and S.M. Szilágyi. *Visual Object Detection with DETR to Support Video-Diagnosis Using Conference Tools*. Applied Sciences, volume 12(12), 5977. MDPI, **2022**. doi: [10.3390/app12125977](https://doi.org/10.3390/app12125977), **Rank AIS: Q3(C), Impact Factor: 2,7**.
12. **A. Biró**. *Gamification, GenAI and reinforcement learning as motivational assets in performance sports*, IEEE 18th International Symposium on Applied Computational Intelligence and Informatics (SACI), Timisoara, Romania, **2024**, IEEE Xplore, p.315-320, doi: [10.1109/SACI60582.2024.10619802](https://doi.org/10.1109/SACI60582.2024.10619802), **Ranking: National (D)**.
13. **A. Biró**, A. I. Cuesta-Vargas and L. Szilágyi, *Applied AI for Real-Time Detection of Lesions and Tumors Following Severe Head Injuries*, 2023 IEEE 21st Jubilee International Symposium on Intelligent Systems and Informatics (SISY), Pula, Croatia, IEEE, IEEE Xplore, pp. 653-658, **2023**. doi: [10.1109/SISY60376.2023.10417915](https://doi.org/10.1109/SISY60376.2023.10417915), **Ranking: National (D)**.
14. **A. Biró**, A. I. Cuesta-Vargas and L. Szilágyi, *AI-controlled training method for performance hardening or injury recovery in sports*, 2024 IEEE 22nd World Symposium on Applied Machine Intelligence and Informatics (SAMI), Stará Lesná, Slovakia, IEEE, IEEE Xplore, pp. 000259-000264, **2024**. doi: [10.1109/SAMI60510.2024.10432911](https://doi.org/10.1109/SAMI60510.2024.10432911), **Ranking: National (D)**.
15. **A. Biró**, A. I. Cuesta-Vargas and S. M. Szilágyi, *Predictive Sports Strategy Approach Using YOLO and YOLO-NAS in Performance Sports*, 2023 IEEE 21st Jubilee International Symposium on Intelligent Systems and Informatics (SISY), Pula, Croatia, IEEE, IEEE Xplore, pp. 000303-000308, **2023**. doi: [10.1109/SISY60376.2023.10417876](https://doi.org/10.1109/SISY60376.2023.10417876), **Ranking: National (D)**.
16. **A. Biró**, K. T. Jánosi-Rancz and L. Szilágyi, *Real-time Artificial Intelligence Text Analysis for Identifying Burnout Syndromes in High-Performance Athletes*, 2024 IEEE 22nd World Symposium on Applied Machine Intelligence and Informatics (SAMI), Stará Lesná, Slovakia, IEEE, IEEE Xplore, pp. 000253-000258, **2024**. doi: [10.1109/SAMI60510.2024.10432817](https://doi.org/10.1109/SAMI60510.2024.10432817), **Ranking: National (D)**.
17. **A. Biró**, A.I. Cuesta-Vargas, and L. Szilágyi. *Precognition of mental health and neurogenerative disorders using AI-parsed text and sentiment analysis*. Acta Universitatis Sapientiae – Informatica, 15, 2(2023):359–403, **2023**. doi: [10.2478/ausi-2023-0022](https://doi.org/10.2478/ausi-2023-0022), **Impact Factor: 0,3**.



**OWN PUBLICATIONS  
NOT PERTAINING TO THESIS**

1. J. Martin-Martin, C. Roldan-Jimenez, I. De-Torres, **A. Biró**, and et al. *Assessment of the Quality of Mobile Applications (Apps) for Management of Low Back Pain Using the Mobile App Rating Scale (MARS)*. In International Journal of Environmental Research and Public Health, volume 17(9209). MDPI, **2020**. doi: [10.3390/ijerph17249209](https://doi.org/10.3390/ijerph17249209).
2. J. Martin-Martin, C. Roldan-Jimenez, I. De-Torres, **A. Biró**, and et al. *Behavior Change Techniques and the Effects Associated With Digital Behavior Change Interventions in Sedentary Behavior in the Clinical Population: A Systematic Review*. In Frontiers in Digital Health, volume 3(620383), **2021**. doi: [10.3389/fdgth.2021.620383](https://doi.org/10.3389/fdgth.2021.620383).
3. J. Martin-Martin, A. Muro-Culebras, C. Roldan-Jimenez, **A. Biró**, and et al. *Evaluation of Android and Apple Store Depression Applications Based on Mobile Application Rating Scale*. In International Journal of Environmental Research and Public Health, volume 18(12505). MDPI, **2021**. doi: [10.3390/ijerph182312505](https://doi.org/10.3390/ijerph182312505).
4. A. Muro-Culebras, A. Escriche-Escuder, J. Martin-Martin, **A. Biró**, and et al. *Tools for Evaluating the Content, Efficacy, and Usability of Mobile Health Apps According to the Consensus-Based Standards for the Selection of Health Measurement Instruments: Systematic Review*. In JMIR mHealth uHealth, volume 9(12), page e15433. JMIR Publications, **2021**. doi: [10.2196/15433](https://doi.org/10.2196/15433).
5. L. Ramírez-Pérez, C. García-Conejo, M. Trinidad-Fernández, **A. Biró**, and et al. *Assessment of the Quality of Technophilia and Technophobia Validated Questionnaires for Management of Digital Health Interventions: Systematic Review and Delphi Consensus. (Preprint)*. JMIR Publications, Journal of Medical Internet Research, **2024**. doi:[10.2196/preprints.59712](https://doi.org/10.2196/preprints.59712).



## OTHER CONFERENCES PERTAINING TO THESIS

1. **A. Biró**, K.T. Jánosi-Rancz, A.I. Cuesta Vargas, J. Martin Martin, S.M. Szilágyi. *Applied Ensemble Learning Methods and ML Models to Support Multilingual, Realtime Distant Diagnostics*. Scientific Session of University Academic Staff International Conference of PhD Students and Young Doctors, George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Tîrgu Mureş, University Days, December 6-10, **2021**, Tîrgu Mureş, Book of abstracts 4/2021, ISSN: 2602-1609, Section:5, p. 188,  
[https://phd.umfst.ro/uploads/BOOK\\_OF\\_ABSTRACTS\\_2021.pdf](https://phd.umfst.ro/uploads/BOOK_OF_ABSTRACTS_2021.pdf)
  
2. **A. Biró**, A.I. Cuesta-Vargas, J. Martín-Martín, S.M. Szilágyi. *AI Proxy In Sports Safety For Multilingual Collaborative Videodiagnosis Solutions*. Scientific Session of University Academic Staff International Conference of PhD Students and Young Doctors, George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Tîrgu Mureş, University Days, December 5-9, **2022**, Tîrgu Mureş, Book of abstracts 5/2022, ISSN: 2602-1609, Section: Science and Technology, p. 153,  
[https://phd.umfst.ro/uploads/BOOK\\_OF\\_ABSTRACTS\\_2022.pdf](https://phd.umfst.ro/uploads/BOOK_OF_ABSTRACTS_2022.pdf)
  
3. **A. Biró**, A.I. Cuesta-Vargas, J. Martín-Martín, S.M. Szilágyi. *AI-Supported Sports Safety And Preventive Health Solutions In Performance Sports*. Scientific Session of University Academic Staff International Conference of PhD Students and Young Doctors, George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Tîrgu Mureş, University Days, December 13, **2023**, Tîrgu Mureş, Book of abstracts 6/2023, ISSN: 2602-1609, Section:4, Engineering-Management,  
[https://phd.umfst.ro/uploads/BOOK\\_OF\\_ABSTRACTS\\_2023.pdf](https://phd.umfst.ro/uploads/BOOK_OF_ABSTRACTS_2023.pdf)

