Akademija tehničkih znanosti Hrvatske
Odjel za informacijske sustave

Izvješće o radu Odjela za informacijske sustave u 2023. godini

Znanstveni radovi

Članovi Odjela objavili su niz znanstvenih radova u zbornicima znanstvenih skupa i u međunarodnim znanstvenim časopisima.

1. Huzjan, Fran; Jurić, Filip; Lončarić, Sven; Vujanović, Milan. Deep Learning-based Image Analysis Method for Estimation of Macroscopic Spray Parameters. Neural Computing and Applications. 35 (13), 9535-9548, 2023, Springer London
2. Domislović, Ilija; Vršnjak, Donik; Subašić, Marko; Lončarić, Sven. Color constancy for non-uniform illumination estimation with variable number of illuminants. Neural Computing and Applications. 35 (20), 14825-14835, 2023, Springer London
3. Domislović, Ilija; Vršnak, Donik; Subašić, Marko; Lončarić, Sven. Shadows & Lumination: Two-illuminant multiple cameras color constancy dataset. Expert Systems with Applications, 224, 120045, 2023, Pergamon
4. Štajduhar, Andrija; Lipić, Tomislav; Lončarić, Sven; Judaš, Miloš; Sedmak, Goran. Interpretable machine learning approach for neuron-centric analysis of human cortical cytoarchitecture. Scientific Reports, 13, 1, 5567, 2023, Nature Publishing Group UK London
5. Vugrin, Jurica; Lončarić, Sven. Real-time NIR camera brightness control using face detection. Automatika, 64 (3), 593-605, 2023, Taylor & Francis
6. Puligandla, V Anirudh; Lončarić, Sven. A Continuous Camera Placement Optimization Model for Surround View. IEEE Transactions on Intelligent Vehicles, DOI: 10.1109/TIV.2023.3299199, 2023, IEEE
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8. Domislović, Ilija; Vršnak, Donik; Subašić, Marko; Lončarić, Sven. Filters & Lumination: Creating multi-illuminant images for computational color constancy. Proceedings of the 2023 8th International Conference on Machine Learning Technologies. 172-176, 2023.
9. Huzjan, Fran; Jurić, Filip; Vujanović, Milan; Lončarić, Sven. Deep Learning-Based Cone Angle Estimation Using Spray Sequence Images. Proceedings of the 2023 8th International Conference on Machine Learning Technologies. 208-213, 2023.
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11. Šikić, Franko; Filipović, Branimir; Kalafatić, Zoran; Subašić, Marko; Lončarić, Sven.Multi-Class Price Tag Detection in Images of Supermarket Shelves. 2023 International Symposium on Image and Signal Processing and Analysis (ISPA). 1-6, 2023, IEEE

12. Vršnak, Donik; Sabolić, Ivan; Subašić, Marko; Lončarić, Sven. Computational Color Constancy-Based Backdoor Attacks, 2023 International Symposium on Image and Signal Processing and Analysis (ISPA). 1-6, 2023, IEEE
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14. Jakobović, Domagoj ; Đurasević, Marko ; Brkić, Karla ; Fosin, Juraj ; Carić, Tonči ; Davidović, Davor. Evolving Dispatching Rules for Dynamic Vehicle Routing with Genetic Programming // Algorithms, 16 (2023), 6; 285, 23. DOI: 10.3390/a16060285
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18. Đurasević, Marko ; Gil-Gala, Francisco Javier ; Jakobović, Domagoj ; Coello Coello, Carlos. Combining single objective dispatching rules into multi-objective ensembles for the dynamic unrelated machines environment // Swarm and evolutionary computation, (2023), DOI: 10.1016/j.swevo.2023.101318
19. Đurasević, Marko; Jakobović, Domagoj; Mariot, Luca; Picek, Stjepan. A survey of metaheuristic algorithms for the design of cryptographic Boolean functions // Cryptography and Communications-Discrete-Structures Boolean Functions and Sequences, (2023), 2, 27. DOI: 10.1007/s12095-023-00662-2
20. Matijević, Luka; Đurasević, Marko; Jakobović, Domagoj. A Variable Neighborhood Search Method with a Tabu List and Local Search for Optimizing Routing in Trucks in Maritime Ports // Mathematics, 11 (2023), 17; 3740, 22. DOI: doi.org/10.3390/math11173740
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36. Abad, G., Xu, J., Koffas, S., Tajalli, B., & Picek, S. (2023). A Systematic Evaluation of Backdoor Trigger Characteristics in Image Classification. arXiv Preprint arXiv:2302. 01740.
37. Durasevic, M., Jakobovic, D., Mariot, L., & Picek, S. (2023). Digging deeper: Operator analysis for optimizing nonlinearity of boolean functions. Proceedings of the Companion Conference on Genetic and Evolutionary Computation, 199–202.
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70. Antoine Trad, Damir Kalpić, Business Transformation Project’s Holistic Agile Management (BTPHAM) ,The Business & Management Review, 2022
71. Antoine Trad, Damir Kalpić, SWOT based Transformation's Organizational Risks, e -Leader, Prague, 2022, Chinese American Scholars Association

72. Žagar, Martin; Mutka, Alan. Data Compression in Gesture-Based Human Machine Interface for Continuous Digital Health. // TELEMATIQUE, 22 (2023), 1; 69-76 (recenziran, članak, znanstveni)
73. Zagar, Martin; Zilora, Stephen. DEVELOPING THE GAMIFICATION APPROACH FOR STEM LEARNING. // INTED2023 Proceedings, Valencia, Španjolska: International Academy of Technology, Education and Development (IATED), 2023. str. 797-802 doi:10.21125/inted.2023.0255 (predavanje, međunarodna recenzija, cjeloviti rad (in extenso), znanstveni)
74. Mutka, Alan; Zivkovic, Fatima; Breka, Mislav; Zagar, Martin. STUDENT RETENTION USING ADVANCED LEARNING VALIDATION SOFTWARE TOOL AND EDUCATIONAL DATA MINING: A CASE STUDY. // INTED2023 Proceedings Valencia, Španjolska: International Academy of Technology, Education and Development (IATED), 2023. str. 8492-8496 doi:10.21125/inted.2023.2350 (predavanje, međunarodna recenzija, cjeloviti rad (in extenso), znanstveni)
75. Žagar, Martin, Samardžija, Jasminka, Mihaljević, Branko, Vidović, Maja. Work in Progress: Enhancing Digital Transformation Awareness of Female International Business Freshmen Students. // EDUCON 2023 conference proceedings / IEEE Service Center (ur.). Kuvajt: IEEE Service Center, 2023. str. 1-3 doi:10.1109/EDUCON54358.2023.10125168 (predavanje, međunarodna recenzija, cjeloviti rad (in extenso), znanstveni)
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77. D. Hofman et al., "European Processor Initiative Demonstration of Integrated Semi-Autonomous Driving System," 2023 IEEE 36th International System-on-Chip Conference (SOCC), Santa Clara, CA, USA, 2023, pp. 1-6, doi: 10.1109/SOCC58585.2023.10257105.
78. D. Hofman and J. Benjak, "Offloading Video Encoding Energy Consumption to the Decoder," 2022 7th International Conference on Smart and Sustainable Technologies (SpliTech), Split / Bol, Croatia, 2022, pp. 1-5, doi: 10.23919/SpliTech55088.2022.9854368.
79. J. Benjak, D. Hofman and M. Perleta, "Spatial and Temporal Complexity Analysis of 4K Drone Footage," 2022 International Conference on Smart Systems and Technologies (SST), Osijek, Croatia, 2022, pp. 301-307, doi: 10.1109/SST55530.2022.9954823.
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81. T. Harmina, D. Hofman and J. Benjak, "DCT Implementation on a Custom FPGA RISC-V Processor," 2023 International Symposium ELMAR, Zadar, Croatia, 2023, pp. 163-167, doi: 10.1109/ELMAR59410.2023.10253892.
82. J. Benjak, D. Hofman, "User Input Search-Custom Motion Estimation Algorithm Optimized for UAVs", 2023 46th MIPRO ICT and Electronics Convention (MIPRO), 506-510, DOI: 10.23919/MIPRO57284.2023.10159960

83. H. Mlinarić, A. Duspara, D.Hofman, J. Knezović, "Flexible FPGA 1D DCT hardware architecture for HEVC", Pages 886-892, Jurnal paper, Automatika, Journal for Control, Measurement, Electronics, Computing and Communications, DOI: 10.1080/00051144.2023.2228580
84. J. Benjak, D. Hofman, J. Knezović, M. Žagar, "Performance Comparison of H.264 and H.265 Encoders in a 4K FPV Drone Piloting System", Applied Sciences-Basel, 12 (2022), 6386, 14 doi:10.3390/app12136386

Organizacija međunarodnih znanstvenih skupova

1. Sven Lončarić, General Co-Chair, 13th Int'l Symposium on Image and Signal Processing and Analysis (ISPA 2023), Rim, Italija, 18.-19. rujna 2023. godine.
2. Sven Lončarić, General Chair, 8th Int'l Workshop on Data Science (IWDS 2023), Zagreb, 25. listopada 2023.
3. Sven Lončarić, General Chair, 11th Croatian Computer Vision Workshop (CCVW 2023). 15. listopada 2023., Zagreb
4. Stjepan Picek, Workshop chair, ESORICS 2023
5. Stjepan Picek, Financial chair, Euro S&P 2023
6. Stjepan Picek, Program committee chair, Indocrypt 2023
7. Stjepan Picek, ACAI Workshop, 2023
8. Stjepan Picek, AICrypt Workshop 2023
9. Stjepan Picek, AIHWS Workshop 2023
10. Stjepan Picek, Summer School on real-world crypto and privacy 2023
11. Martin Žagar, JavaCRO 23, Rovinj, 15-17.10.2023.
12. Dinko Begušić bio je General Co-Chair skupa 31st International Conference on Software, Telecommunications and Computer Networks (SoftCOM 2023) održanog u Splitu od 21.-23. rujna 2023.

Projekti

1. Sven Lončarić, voditelj projekta na FER-u kao partneru, „Europska inicijativa za standardizaciju kolaborativne zračne borbe“, European Defence Fund, 2022.-2026.
2. Sven Lončarić, voditelj projekta, DATACROSS, Znanstveni centar izvrsnosti za znanost o podatcima i napredne kooperativne sustave (suvoditelj s akademikom Ivanom Petrovićem), Europski fond za regionalni razvoj, 2017.-2023.
3. Sven Lončarić, voditelj projekta na FER-u kao partneru, "Sustav za vizualno prepoznavanje proizvoda na policama", Europski fond za regionalni razvoj, 2020-2023.
4. Martin Žagar, InterReg project “air MONItoring aCrosss Adriatic”, Project duration: 2023 – 2024, Project leader: RIT Croatia, role: PI, Budget: 213.384 EUR

5. Martin Žagar, InterReg project “Telemedicine Education Advancement through Microcredentials”, Project duration: 2023 – 2026, Project leader: FIS Novo Mesto, Slovenia, role: Institution coordinator and WP leader, Budget: 400.000 EUR
6. Martin Žagar, Erasmus project “Micro-credentials in digital health for Ethiopia and Somalia”, Project duration: 2023 – 2026, Project leader: University of Piraeus, role: Institution coordinator and WP leader, Budget: 400.000 EUR
7. Daniel Hofman, voditelj projekta na FER-u kao partneru, „Razvoj uređaja za prijenos signala ultra niske latencije“, EFRR – IRI-II, 2020.-2023.
8. 2. Daniel Hofman, "EPI SGA2" (European Processor Initiative), Horizon 2020 - FPA JTI-EuroHPC, istraživač, 2023.-2025.

Knjige

1. M. Carli, F. Battisti, S. Lončarić, Eds. Proceedings of the 13th Int'l Symposium on Image and Signal Processing and Analysis (ISPA 2023)“, Rim, Italija, 18.-19. rujna 2023. godine. IEEE

Pozvana predavanja

1. Sven Lončarić**.** How the future workplace will be changed by artificial Intelligence. 3rd EuropeanWorkshop of the European Banking Federation, Zagreb 13. listopada 2023.
2. Predavanje na daljinu Damir Kalpić: “Linear programing basics” za Henan Polytechnic University, NR Kina
3. Predavanje na daljinu Damir Kalpić: “Linear programing 02” za Henan Polytechnic University, NR Kina
4. S. Picek, ASCI Winterschool on Deep Learning, Oegstgeest (Nizozemska).
5. S. Picek, Tutorial, Indocrypt konferencija, Goa (India).
6. S. Picek, Panelist, Fifth AMSec Workshop: How do we unite cybersecurity and artificial intelligence?, Amsterdam (Nizozemska).
7. S. Picek, Pozvani predavac na CROSSING konferenciji 2023, Darmstadt (Njemacka).
8. S. Picek, Panelist, Glowing Hot Topics in Cryptography Workshop, Santa Barbara (SAD).
9. S. Picek, Pozvani predavac, International Hardware Security Forum (Building Secure Systems Bottom Up: Devices to Systems), Kyoto (Japan).
10. S. Picek, Pozvani predavac, PROACT Training school, Vodice (Hrvatska).
11. S. Picek, Pozvani predavac, Security Summit New Work SE, Hamburg (Njemacka).
12. S. Picek, Pozvani predavac, School on Applied Cryptography, Bangkok (Tajland).
13. S. Picek, Pozvani predavac, Intel, USA.
14. S. Picek, Pozvani predavac na NORCICS 2023 konferenciji, Norveska.Mile Šikić: Asian Reference Genome Project, International Genome Graph Symposium 2022, Monte Verita, Ascona, Švicarska - July 3-7, 2022

Ostala postignuća

1. Sven Lončarić, predsjednik Simpozija, Prvi hrvatski simpozij o umjetnoj inteligenciji. 21. studenoga 2023., Hrvatska akademija znanosti i umjetnosti
2. Zdravko Krakar, e - Priručnik „Upravljanje usklađenostima (Compliance Management)“ (https://zih.hr/2023/06/20835)
3. Zdravko Krakar ,Vođenje bloga Upravljanje usklađenostima **(**https://zih.hr/blog/
4. Zdravko Krakar ,Objavljeno 11 članaka na Linkedinu o različitim aspektima upravljanja usklađenostima (https://www.linkedin.com/in/zdravko-krakar-3486721b/recent-activity/articles/
5. Zdravko Krakar ,Održano 6 radionica na temu „Usklađenost poslovanja u trgovačkim društvima u većinskom vlasništvu Republike Hrvatske“ (Za javne tvrtke, obveznici provedbe Odluke Vlade RH, NN 99/2019)
6. Stjepan Picek, Urednik IEEE Transactions on Information Security and Forensics
7. Stjepan Picek, Urednik Journal of Cryptographic Engineering
8. Dinko Begušić, Urednik Journal of Communications Software and Systems

Priznanja

1. Prema studiji Sveučilišta Stanford, Sven Lončarić rangiran je među 2% najutjecajnijih znanstvenika u svijetu u svojem polju istraživanja.
2. Prema studiji Sveučilišta Stanford, Stjepan Picek rangiran je među 2% najutjecajnijih znanstvenika u svijetu u svojem polju istraživanja u 2022. godini.
3. Stjepan Picek je dobio Rikard Podhorsky nagradu Akademije tehnickih znanosti Hrvatske.
4. Stjepan Picek je dobio Nagradu Hrvatske sekcije IEEE za izniman inženjerski doprinos.

Ostale aktivnosti

1. Održano je više elektroničkih sjednica vezano za aktivnosti Odjela.
2. Proveden je postupak predlaganja kandidata za izbor novog člana suradnika Akademije gdje je u Odjelu informacijskih sustava bilo izabran jedan novi član suradnik.

U Zagrebu, 5. prosinca 2023.

Tajnik Odjela za informacijske sustave:

Prof. dr. sc. Dinko Begušić