Záznamy vložené do ASEP za UI (1. 11. – 30. 11. 2025)

New ICS records in ASEP (1. 11. – 30. 11. 2025)

0642055 - ÚI 2026 RIV NL eng M - Monography Chapter
Kalina, Jan
Building trust in digital healthcare: Navigating disinformation, AI, ethics, and legal challenges.
Digital Tools and Data for Innovative Healthcare. Amsterdam: Elsevier / Academic Press, 2025 - (Ordóñez De Pablos, P.; Lytras, M.), s. 3-25. ISBN 978-0-443-27444-2
Grant - others:AV ČR(CZ) StrategieAV21/34
Program: StrategieAV
Institutional support: RVO:67985807
Keywords : Algorithms * Artificial intelligence * Digital healthcare * Disinformation * Health equity * Information-based medicine * Legal aspects * Medical ethics * Trust
Result website: https://doi.org/10.1016/B978-0-443-27444-2.00003-4
DOI: https://doi.org/10.1016/B978-0-443-27444-2.00003-4
Trust is a cornerstone of digital healthcare, crucial for fostering relationships among patients, healthcare professionals, and society. This chapter explores the multifaceted nature of trust, examining how it is impacted by disinformation, ethical considerations, and legal frameworks, particularly in the context of AI-supported healthcare delivery. The spread of disinformation, especially during the COVID-19 pandemic, has undermined public confidence in healthcare technologies. To rebuild trust, collaboration among digital platforms, governments, and healthcare providers is essential. Ethical transparency regarding patient autonomy, informed consent, and data usage is vital, just like robust legal protections. By addressing bias in artificial intelligence and ensuring equitable care, trust in these systems can be strengthened, promoting a reliable and inclusive future for digital healthcare.
Permanent Link: https://hdl.handle.net/11104/0372022

0641014 - ÚI 2026 DE eng J - Journal Article
Fussner, Daniel Wesley - Santschi, S.
Amalgamation in Semilinear Residuated Lattices.
Studia Logica. Online first, 8 October 2025 (2025). ISSN 0039-3215. E-ISSN 1572-8730
R&D Projects: GA ČR(CZ) GM25-18306M
Institutional support: RVO:67985807
Keywords : Amalgamation * Interpolation * Lattice-ordered groups * Residuated lattices * Substructural logic
Impact factor: 0.6, year: 2024 ; **AIS:** 0.419, rok: 2024
Method of publishing: Open access
DOI: https://doi.org/10.1007/s11225-025-10206-9
We survey the state of the art on amalgamation in varieties of semilinear residuated lattices. Our discussion emphasizes two prominent cases from which much insight into the general picture may be gleaned: idempotent varieties and their generalizations (n-potent varieties, knotted varieties), and cancellative varieties and their relatives (MV-algebras, BL-algebras). Along the way, we illustrate how general-purpose tools developed to study amalgamation can be brought to bear in these contexts and solve some of the remaining open questions concerning amalgamation in semilinear varieties. Among

other things, we show that the variety of commutative semilinear residuated lattices does not have the amalgamation property. Taken as a whole, we see that amalgamation is well understood in most interesting varieties of semilinear residuated lattices, with the last few outstanding open questions remaining principally in the cancellative setting.
Permanent Link: https://hdl.handle.net/11104/0371243

0641009 - ÚI 2026 eng J - Journal Article
Miznerová, B. - Aijo, M. - Reissigová, Jindra - Phillip, T. - Řasová, K.
Effects of virtual reality on upper limb outcomes and quality of life in people with multiple sclerosis: a systematic review.
European Journal of Physiotherapy. Online 14 October 2025 (2025). ISSN 2167-9169. E-ISSN 2167-9177
Institutional support: RVO:67985807
Keywords : Multiple sclerosis * physiotherapy * virtual reality * upper limb * quality of life * rehabilitation
Impact factor: 1.1, year: 2024 ; **AIS:** 0.371, rok: 2024
Method of publishing: Limited access
Result website: https://doi.org/10.1080/21679169.2025.2569443
DOI: https://doi.org/10.1080/21679169.2025.2569443
BackgroundVarious virtual reality (VR) approaches in rehabilitation aim to improve the functional status of people with Multiple Sclerosis (PwMS). This systematic review examines the VR tools used, identifying key factors for efficiency and improvement in upper limb (UL) function and quality of life (QoL). Given the ongoing need for PwMS to maintain or improve their quality of life, rehabilitation interventions hold significant potential.MethodsTwo independent investigators conducted the primary search for eligible studies using PubMed, Science Direct, Web of Science, Cinahl, and PEDro databases. Data on design, methods, and results were then extracted from the retrieved articles and analysed for validity and bias using the RoB 2 tool and PEDro scale by three independent assessors.ResultsFrom 343 articles, we selected 12 randomised controlled trials using VR environments in PwMS that evaluated UL function and QoL. Studies differed greatly regarding the therapy content, setting, and therapy dosage, but they often indicated improvement in fine and gross motor skills, manual dexterity, improved UL functioning, bimanual coordination, and grip strength within the intervention group. In most cases, the effect on QoL was non-significant except for one finding that the intervention had a positive impact on the physical domain of MSQoL-54.ConclusionWe conclude that virtual reality is a suitable tool for rehabilitation in PwMS with substantial benefits. This improvement in perceived health and QoL was mostly not reflected. The question also remains whether and to what extent VR could be more effective than standard therapy.
Permanent Link: https://hdl.handle.net/11104/0371238

0640934 - ÚI 2026 RIV US eng J - Journal Article
Osnes, B. - Bless, J. J. - Specht, K. - Hugdahl, Kenneth - Sorensen, L.
The Relation Between Auditory Cognitive Control and Vagally-Mediated Heart Rate Variability in and Outside the Lab: Differential Effects of Circadian Rhythm?
Psychophysiology. Roč. 62, č. 9 (2025), č. článku e70133. ISSN 0048-5772. E-ISSN 1469-8986
Institutional support: RVO:67985807
Keywords : auditory cognitive control * autonomic nervous system * dichotic listening * heart rate variability

OECD category: Neurosciences (including psychophysiology
Impact factor: 2.8, year: 2024 ; **AIS:** 1.185, rok: 2024
Method of publishing: Limited access
Result website: https://doi.org/10.1111/psyp.70133
DOI: https://doi.org/10.1111/psyp.70133
Auditory cognitive control is crucial for filtering relevant information from irrelevant distractions, a frequent challenge in noisy everyday environments. This study investigates the association between vagally mediated heart rate variability (HRV) and auditory cognitive control, employing the Bergen Dichotic Listening (BDL) task. We hypothesized that higher HRV would be associated with enhanced performance in the cognitively demanding forced-left (FL) condition of the BDL, which is a validated measure of auditory cognitive control. Our sample consisted of 63 healthy individuals (N = 35 women), who performed the BDL task in a laboratory setting, with resting HRV measurements taken, followed by real-life cognitive assessments with simultaneous ambulatory HRV monitoring conducted three times across different times of the day. The results confirmed a significant positive relationship between HRV and performance in the FL condition but not in the less demanding forced-right condition (FR). Furthermore, ambulatory measurements revealed that this relationship was influenced by circadian rhythms, showing stronger positive correlations during the night and morning. These findings highlight HRV as a promising biomarker for auditory cognitive control and underscore the impact of time of day on cognitive performance. This study broadens our understanding of the autonomic nervous system's role in cognitive functions and affirms the extension of laboratory findings to daily life settings.
Permanent Link: https://hdl.handle.net/11104/0371184

0640938 - ÚI 2026 US eng J - Journal Article
Martín, I. - Zamora-López, Gorka - Fousek, J. - Schirner, M. - Ritter, P. - Jirsa, V. - Deco, G. - Patow, G.
TVB C++: A Fast and Flexible Back-End for The Virtual Brain.
Advanced Science. Online First 17 October 2025 (2025). ISSN 2198-3844. E-ISSN 2198-3844
R&D Projects: GA MŠMT(CZ) EH22_008/0004643
Institutional support: RVO:67985807
Keywords : Whole-brain network models * brain simulation engines * C++ * TVB backend
OECD category: Neurosciences (including psychophysiology
Impact factor: 14.1, year: 2024 ; **AIS:** 3.22, rok: 2024
Method of publishing: Open access
Result website: https://doi.org/10.1002/advs.202406440
DOI: https://doi.org/10.1002/advs.202406440
This study introduces TVB C++, a streamlined and fast C++ Back-End for The Virtual Brain (TVB), a renowned platform and a benchmark tool for full-brain simulation. TVB C++ is engineered with speed as a primary focus while retaining the flexibility and ease of use characteristic of the original TVB platform. Positioned as a complementary tool, TVB serves as a prototyping platform, whereas TVB C++ becomes indispensable when performance is paramount, particularly for large-scale simulations and leveraging advanced computation facilities like supercomputers. Developed as a TVB-compatible Back-End, TVB C++ seamlessly integrates with the original TVB implementation, facilitating effortless usage. Users can easily configure TVB C++ to execute the same code as in TVB but with enhanced performance and parallelism capabilities. As a consequence, TVB C++ will enable the widespread use of individualized models that will open the possibility of designed tailored solutions at the individual patient level.
Permanent Link: https://hdl.handle.net/11104/0371187

0642021 - ÚI 2026 RIV GB eng J - Journal Article
Brkić, J. - Reissigová, Jindra - Okuyan, B. - Hadziabdic, M. O. - Marinković, V. - Somers, A. - Onder, G. - Sesto, S. - Altiparmak, O. - Kummer, I. - Držaić, M. - Fialová, D.
Assessing potentially inappropriate medication use among older adults in Central and Eastern Europe.
Annals of Medicine. Roč. 57, č. 1 (2025), č. článku 2579794. ISSN 0785-3890. E-ISSN 1365-2060
Institutional support: RVO:67985807
Keywords : Potentially inappropriate medication list * aged * prevalence
Impact factor: 4.3, year: 2024 ; **AIS:** 1.077, rok: 2024
Method of publishing: Open access
Result website: https://doi.org/10.1080/07853890.2025.2579794
DOI: https://doi.org/10.1080/07853890.2025.2579794
OBJECTIVE: The aim of this study was to examine the prevalence of potentially inappropriate medication (PIM) use and its associated risk factors in community-dwelling older adults from five Central and Eastern European (CEE) countries. MATERIALS AND METHODS: This secondary analysis of a cross-sectional survey, which was part of the Horizon 2020 EuroAgeism ESR7 project, was conducted between February 2019 and March 2020 in Bulgaria, Croatia, Czechia, Estonia, and Serbia. We enrolled older adults aged ≥ 65 years who visited community pharmacies to acquire medications. The prevalence of PIM use was determined by applying all 282 criteria from the EU(7)-PIM list. Risk and protective factors for PIM use were evaluated using multiple logistic regression. R software version 4.3.2 was used in statistical analysis. RESULTS: Most of the 2,155 participants were women (63.3%) and aged 65–74 years (64.8%). The overall PIM prevalence was 56.0% (95% confidence interval 53.8%–58.1%), ranging from 29.5% in Czechia to 70.0% in Croatia. The most commonly used PIMs were benzodiazepines (16.7% of all PIMs), followed by nonsteroidal anti-inflammatory drugs (14.3%), and proton pump inhibitors taken for more than 8 weeks (14.1%). Multiple logistic regression revealed that residence, increasing comorbidity burden, and polypharmacy were significant risk factors associated with PIM use in older adults. CONCLUSIONS: Our findings demonstrate a high prevalence of PIM use among older patients from CEE countries and considerable cross-country differences, underscoring the need to improve medication prescribing for older adults to improve healthcare quality and patient outcomes. KEY MESSAGES: Potentially inappropriate medication use is widespread in Central and Eastern Europe. It is necessary to improve the prescribing process for older adults worldwide.
Permanent Link: https://hdl.handle.net/11104/0371989

0642017 - ÚI 2026 GB eng J - Journal Article
Liczbińska, G. - Brabec, Marek - Pankowski, P. - Antosik, S. - Vögele, J. P.
Love in the time of cholera. Cholera epidemics and changes in the marriage market in nineteenth-century Poznań.
The History of the Family. Online 02 November 2025 (2025). ISSN 1081-602X. E-ISSN 1873-5398
Grant - others:AV ČR(CZ) StrategieAV21/37
Program: StrategieAV
Institutional support: RVO:67985807
Keywords : Post-epidemic phases * marriage age * difference * first-married spouses * widowed individuals * generalised additive modelling * complexity-penalized splines
Impact factor: 0.7, year: 2024 ; **AIS:** 0.636, rok: 2024
Method of publishing: Limited access
DOI: https://doi.org/10.1080/1081602X.2025.2578470
This study investigates how cholera epidemics shaped marriage patterns in 19th-century Pozna & nacute;, using formalized statistical modeling on individual records of 12,606 married couples from 1830 to 1874. Seven waves of cholera epidemics were studied (1831, 1837, 1848, 1852, 1855, 1866, and 1873). The number of months between the date of marriage and the end of the last epidemic was used in the modelling as a covariate with a potentially non-linear response. To examine the

effects of epidemics upon marriages, we focused on the immediate post-epidemic period. The time frame of interest was defined as the interval starting at the end of a cholera epidemic and ending 12 months later. We observed a statistically significant effect of the parish (inter-parish heterogeneity; $p < 0.001$) and the number of months elapsing after the end of the cholera epidemic ($p < 0.05$) on the difference in the mean marriage age between groom and bride (in years). This difference rose in a non-linear and non-monotonic fashion, peaking twice: around 2 months and 8-9 months after the epidemic. The likelihood of marriages involving a disparity in marital status - where one partner was a widow/widower and the other was marrying for the first time - fluctuated significantly throughout the post-epidemic year, increasing in January, July, and August, and declining in April and October. The waves of cholera epidemics significantly influenced the likelihood of marriages between partners of different religious affiliations, particularly in the period following the end of the outbreaks. These patterns reflect a demographic deficit in Pozna & nacute; after each epidemic, unevenly distributed across social strata, which disrupted the marriage market, influenced partner selection, and altered marriage timing and age dynamics. The findings underscore the profound social and demographic consequences of epidemics, highlighting how mortality crises can reshape intimate social structures and behaviors.
Permanent Link: https://hdl.handle.net/11104/0371985

0642079 - ÚI 2026 RIV GB eng J - Journal Article
DeBiasio, L. - Han, J. - Lo, A. - Molla, T. - Piga, Simon - Treglown, A.
Powers of Hamilton cycles in oriented and directed graphs.
Combinatorics Probability & Computing. Online 28 October 2025 (2025). ISSN 0963-5483. E-ISSN 1469-2163
Institutional support: RVO:67985807
Keywords : Powers of Hamilton cycles * directed graphs; * regularity lemma * blow-up lemma * absorbing * dependent random choice * tournaments
Impact factor: 0.8, year: 2024 ; **AIS:** 1.081, rok: 2024
Method of publishing: Open access
Result website: https://doi.org/10.1017/S0963548325100230
DOI: https://doi.org/10.1017/S0963548325100230
The Pósa–Seymour conjecture determines the minimum degree threshold for forcing the kth power of a Hamilton cycle in a graph. After numerous partial results, Komlós, Sárközy, and Szemerédi proved the conjecture for sufficiently large graphs. In this paper, we focus on the analogous problem for digraphs and for oriented graphs. We asymptotically determine the minimum total degree threshold for forcing the square of a Hamilton cycle in a digraph. We also give a conjecture on the corresponding threshold for kth powers of a Hamilton cycle more generally. For oriented graphs, we provide a minimum semi-degree condition that forces the kth power of a Hamilton cycle; although this minimum semi-degree condition is not tight, it does provide the correct order of magnitude of the threshold. Turán-type problems for oriented graphs are also discussed.
Permanent Link: https://hdl.handle.net/11104/0372040

0640713 - PSÚ 2026 GB eng J - Journal Article
Kollerová, Lenka - Lintner, T. - Ropovik, Ivan - Klocek, Adam - Hlinka, Jaroslav - Strohmeier, D.
How Students (Dis)like Victimized Classmates: A Longitudinal Network Analysis.
Journal of School Violence. říjen (2025). ISSN 1538-8220. E-ISSN 1538-8239
R&D Projects: GA ČR(CZ) GA23-06289S; GA MŠMT(CZ) LX22NPO5101
Institutional support: RVO:68081740 ; RVO:67985807

Keywords : adolescence * bullying * peer social networks * SAOM * victimization
OECD category: Psychology (including human - machine relations); Cognitive sciences (UIVT-O)
Impact factor: 2, year: 2024 ; **AIS:** 0.694, rok: 2024
Method of publishing: Open access
Result website: https://www.tandfonline.com/doi/full/10.1080/15388220.2025.2577186
DOI: https://doi.org/10.1080/15388220.2025.2577186
Research shows victims have lower peer status, but whether bullying participants differ in (dis)liking them and if classroom context matters remains unclear. Early adolescents (N = 751) were assessed twice over six months for (dis)liking and reputational nominations on physical bullying, defending, and victimization. SAOMs showed that victims did not experience a decline in being liked or an increase in being disliked over six months and almost no differences in how bullies, victims, and defenders (dis)liked (other) victims were found, except that victims developed disliking toward other victims over time. Despite assumptions of the healthy context paradox, classroom victimization did not moderate (dis)liking toward victims. Overall, the (dis)liking was stable and largely consistent across bullying participants and classroom contexts, though concerning dislike emerged among victims.
Permanent Link: https://hdl.handle.net/11104/0371131

0641461 - ÚI 2026 RIV NL eng J - Journal Article
Vlachos, Ioannis - Moschovos, Ch. - Apostolakopoulou, L. - Karasavvidou, K. - Ntanasi, E. - Mamalaki, E. - Kugiumtzis, D. - Kimiskidis, V. K. - Scarmeas, N. - Kyrozis, A.
Resting EEG partial coherence demonstrates increased γ range central functional connectivity in amnestic mild cognitive impairment.
Brain Research. Roč. 1867, November 2025 (2025), č. článku 149973. ISSN 0006-8993. E-ISSN 1872-6240
Institutional support: RVO:67985807
Keywords : Alzheimer's * Mild cognitive impairment * Gamma * Functional connectivity * Coherence * Partial coherence
OECD category: Neurosciences (including psychophysiology
Impact factor: 2.6, year: 2024 ; **AIS:** 0.713, rok: 2024
Method of publishing: Limited access
Result website: https://doi.org/10.1016/j.brainres.2025.149973
DOI: https://doi.org/10.1016/j.brainres.2025.149973
OBJECTIVE: Relatively little is known about EEG high gamma (gamma) range changes in Alzheimer's disease (AD). We investigated functional connectivity, focusing on the gamma range, in amnestic Mild Cognitive Impairment (MCI) using ordinary Coherence (COH) and Partial Coherence (PCOH), a metric which enhances signal-to-noise ratio at high frequencies. METHODS: MCI (N=21) and Cognitively Normal (CN, N=62) ALBION study participants had resting EEG with eyes closed (EC) and eyes open (EO) in 10/20 montage (19 active electrodes). COH and PCOH in 0.5-100 Hz for each subject were calculated for all 171 electrode pairs. RESULTS: In both gamma1 (30-50 Hz) and gamma2 (50-100 Hz) ranges, PCOH was significantly higher in MCI than in CN in several electrode pairs, especially centrally, in both eye conditions. Concerning local (average of each electrode) connectivity, MCI compared to CN showed significantly higher values in PCOH centrally. CONCLUSIONS: Resting EEG gamma range functional connectivity at central areas, as revealed by PCOH, is significantly higher in MCI than in CN. SIGNIFICANCE: Gamma range local and regional EEG functional connectivity differences may help construct useful and easily available biomarkers in neurodegeneration. Metrics such as PCOH, which factor out global connectivity components, may help reveal such differences.
Permanent Link: https://hdl.handle.net/11104/0371609

0641335 - ÚI 2026 RIV NL eng J - Journal Article
Rádlová, S. - Pidnebesna, Anna - Chomik, A. - Tomeček, D. - Hlinka, Jaroslav - Frynta, D. - Landová, E.
From ancient fears to airborne threats: fMRI insights into neural fear responses.
Brain and Cognition. Roč. 191, December 2025 (2025), č. článku 106371. ISSN 0278-2626. E-ISSN 1090-2147
R&D Projects: GA MŠMT(CZ) EH22_008/0004643
Institutional support: RVO:67985807
Keywords : Ancestral fear * Modern fear * Airborne diseases * fMRI * Neural response * Functional magnetic resonance
OECD category: Neurosciences (including psychophysiology
Impact factor: 1.4, year: 2024 ; **AIS:** 0.83, rok: 2024
Method of publishing: Limited access
Result website: https://doi.org/10.1016/j.bandc.2025.106371
DOI: https://doi.org/10.1016/j.bandc.2025.106371
Threat perception is a fundamental aspect of human cognition, shaped by evolutionary pressures and modern environmental demands. While ancestral threats (e.g., snakes) have been shown to elicit stronger neural responses than modern threats (e.g., guns), less is known about how the brain processes airborne threats, such as depictions of individuals wearing face masks. This fMRI study investigates neural responses to ancestral, modern, and airborne threats to identify shared and distinct activation patterns.
Sixty participants viewed visual stimuli from the three categories while undergoing fMRI scanning. Results showed heightened activation in the fear-processing network for all affective stimuli. In addition, activation of the ventral attention network was found for the ancestral threats. Modern threats elicited less intense responses, primarily engaging cortical regions associated with context-specific analysis. Notably, airborne threats elicited neural responses of similar intensity to ancestral threats but activated cortical regions overlapping with those for modern threats. This dual pattern highlights the brain's capacity to integrate evolutionary biases with socially constructed threat awareness. These findings underscore the importance of recognizing airborne threats as a unique category of threat processing, with implications for public health and mental well-being.
Permanent Link: https://hdl.handle.net/11104/0371517

0641211 - ÚI 2026 RIV DE eng J - Journal Article
De Martin Polo, Fabio
Exploring Jaśkowski's Discussive Logic: Proof Analysis and Related Remarks.
Journal of Philosophical Logic. Roč. 54, September 2025 (2025), s. 935-993. ISSN 0022-3611. E-ISSN 1573-0433
Institutional support: RVO:67985807
Keywords : Discussive logic * Modal logic * Sequent calculus * Embedding * Proof search * Natural deduction * Paraconsistency
OECD category: Computer sciences, information science, bioinformathics (hardware development to be 2.2, social aspect to be 5.8)
Impact factor: 1, year: 2024 ; **AIS:** 0.885, rok: 2024
Method of publishing: Open access
Result website: https://doi.org/10.1007/s10992-025-09808-4
DOI: https://doi.org/10.1007/s10992-025-09808-4
This paper presents a comprehensive proof-theoretic analysis of Jaśkowski's discussive (or discursive) logic, working with a set of connectives including classical negation and disjunction, as well as so-called (right-)discussive conjunction and discussive implication. By employing established techniques

two labelled frameworks are introduced: sequent and natural deduction systems. The paper explores the ability of the proposed calculi to accurately represent Jaśkowski's discussive logic, particularly in light of its paraconsistent nature, and establishes cut-admissibility and normalization theorems. Additionally, the introduced sequent calculus – shown to allow terminating proof search – is employed to prove the embedding of discussive logic within modal logic S5. Finally, it is proved that the natural deduction calculus translates into the corresponding sequent system, with soundness and completeness established for both calculi. Concluding remarks highlight the potential for expanding this study and suggest directions for future research.
Permanent Link: https://hdl.handle.net/11104/0371416

0641222 - ÚI 2026 RIV AU eng J - Journal Article
Ferenz, Nicholas - Tedder, A.
The Content of Content Semantics.
Australasian Journal of Logic. Roč. 22, č. 5 (2025), s. 487-507. ISSN 1448-5052. E-ISSN 1448-5052
R&D Projects: GA ČR(CZ) GA22-01137S
Institutional support: RVO:67985807
Keywords : content semantics
OECD category: Pure mathematics
Impact factor: 0.4, year: 2024 ; **AIS:** 0.558, rok: 2024
Method of publishing: Open access
Result website: https://doi.org/10.26686/ajl.v22i5.9252
DOI: https://doi.org/10.26686/ajl.v22i5.9252
In this paper, we investigate Brady's content semantics, which was an early attempt to get around the infamous incompleteness of the standard axiom systems for quantified relevant logics with regard to constant domain expansions of ternary relation semantics. We investigate this semantic framework by showing equivalence to a variation on a recently proposed algebraic version of semantics due to Mares and Goldblatt.
Permanent Link: https://hdl.handle.net/11104/0371418

0641859 - ÚI 2026 GB eng J - Journal Article
Cintula, Petr
A Variant of Abstract Lindenbaum Lemma for Infinitary Consequence Relations.
Review of Symbolic Logic. Accepted November 2025 (2025). ISSN 1755-0203. E-ISSN 1755-0211
Institutional support: RVO:67985807
Impact factor: 0.9, year: 2024 ; **AIS:** 0.699, rok: 2024
Method of publishing: Limited access
DOI: https://doi.org/10.1017/S1755020325101019
Permanent Link: https://hdl.handle.net/11104/0371871

0641191 - ÚI 2026 eng C - Conference Paper (international conference)
Brown, Ch. E. - Chvalovský, K. - Janota, M. - Olšák, M. - Ratschan, Stefan
SMT and Functional Equation Solving over the Reals: Challenges from the IMO.
[CADE 2025: The International Conference on Automated Deduction /30./. Stuttgart (DE), 28.08.2025-31.08.2025]
Grant - others:AV ČR(CZ) StrategieAV21/34
Program: StrategieAV
Institutional support: RVO:67985807

Keywords : IMO * instantiations * lemmas * Quantifier elimination * real arithmetic * SMT
OECD category: Computer sciences, information science, bioinformathics (hardware development to be 2.2, social aspect to be 5.8)
Result website:
https://doi.org/10.1007/978-3-031-99984-0_9
DOI: https://doi.org/10.1007/978-3-031-99984-0_9

We use SMT technology to address a class of problems involving uninterpreted functions and nonlinear real arithmetic. In particular, we focus on problems commonly found in mathematical competitions, such as the International Mathematical Olympiad (IMO), where the task is to determine all solutions to constraints on an uninterpreted function. Although these problems require only high-school-level mathematics, state-of-the-art SMT solvers often struggle with them. We propose several techniques to improve SMT performance in this setting.
Permanent Link: https://hdl.handle.net/11104/0371386

0641463 - ÚI 2026 RIV CH eng C - Conference Paper (international conference)
Neruda, Roman - Figueroa-Garcia, J.C. - Franco Franco, C. A.
Meta-learning for Performance Prediction of Machine Learning Models.
Applied Computer Sciences in Engineering: 12th Workshop on Engineering Applications, WEA 2025, Proceedings, Part I. Cham: Springer, 2026 - (Figueroa-García, J.; López-Sotelo, J.; Moreno-Trujillo, J.; Gaona-García, E.), s. 26-37. Communications in Computer and Information Science, 2701. ISBN 978-3-032-08202-2. ISSN 1865-0929.
[WEA 2025: Workshop on Engineering Applications /12./. Cali (CO), 29.10.2025-31.10.2025]
R&D Projects: GA MŠMT(CZ) EH23_025/0008711
Institutional support: RVO:67985807
Keywords : Machine learning * Meta-learning * Performance prediction Auto-ML
OECD category: Computer sciences, information science, bioinformathics (hardware development to be 2.2, social aspect to be 5.8)
Result website:
https://doi.org/10.1007/978-3-032-08203-9_3
DOI: https://doi.org/10.1007/978-3-032-08203-9_3
The goal of automated machine learning is to search for a suitable machine learning model given a problem specified by data. In this work we are interested in the domain of complex supervised machine learning models. Since the performance evaluation of complex models is time consuming, several performance prediction approaches have been proposed. The objective of this work is utilizing the meta-learning approach – we make use of the previous experience with models' performance on benchmark tasks in order to estimate the performance on a previously unseen dataset. We extract features describing the structure of the models, as well as meta-data features describing the datasets. The information about the model and task are aggregated and used to train a regression model serving as a performance predictor. The advantage of this approach is that the model performance is estimated without training, using just feature extraction and regressor inference. The approach is successfully tested on a large collection of models and their performance information from the OpenML repository, and the results are reported in the paper. Several alternatives for feature extraction and regression procedures are also compared.
Permanent Link: https://hdl.handle.net/11104/0371613

0641201 - ÚI 2026 RIV US eng C - Conference Paper (international conference)
Pitra, Z. - Tumpach, J. - Holeňa, Martin
Landscape Analysis for Surrogate Models in the Evolutionary Black-Box Context.

GECCO '25 Companion: Proceedings of the Genetic and Evolutionary Computation Conference Companion. New York: Association for Computing Machinery (ACM), 2025 - (Ochoa, G.; Filipič, B.), s. 51-52. ISBN 979-8-4007-1464-1.
[GECCO 2025: The Genetic and Evolutionary Computation Conference. Málaga / hybrid (ES), 14.07.2025-18.07.2025]
Institutional support: RVO:67985807
Keywords : Black-box optimization * Surrogate modeling * Landscape analysis * Metalearning CMA-ES
OECD category: Computer sciences, information science, bioinformathics (hardware development to be 2.2, social aspect to be 5.8)
Result website:
https://doi.org/10.1145/3712255.3734236
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This paper, originally published in Evolutionary Computation Journal [11], investigates the interplay between surrogate model performance, model settings, and black-box landscape features within the context of Covariance Matrix Adaptation Evolution Strategy (CMA-ES). Our focus is on understanding how landscape characteristics influence surrogate model accuracy during evolutionary optimization, aiming to inform the automated selection and tuning of surrogate models. We perform a comprehensive feature analysis, identifying robust and informative landscape features relevant to surrogate modeling. The analysis explores the error dependencies of four models across 39 settings, utilizing three methods for input data selection, drawn from surrogate-assisted CMA-ES runs on noiseless benchmarks within the Comparing Continuous Optimizers framework. The insights gained can help in the development of adaptive surrogate modeling strategies and metalearning approaches for evolutionary computation.
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Specifické tepelné prostředí měst, typicky spojené s projevy městských tepelných ostrovů, patří k významným faktorům životního prostředí městských populací. Ve městech dnes přitom žije více než polovina lidstva. Městské teplo se řadí mezi časté příčiny environmentálního stresu, ovlivňuje životní pohodu, zdraví a úmrtnost obyvatel a působí na řadu dalších faktorů, které ovlivňují jak přírodní, tak i socioekonomické prostředí měst. Zvyšující se globální teplota a rostoucí extremita klimatu současně vedou k potřebě adaptace na tyto změny. Problematika tepelného prostředí města vyžaduje v oblasti střední Evropy stále více pozornosti, zejména v případě zranitelných skupin.
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