Záznamy vložené do ASEP za UI (1. 8. – 30. 9. 2023)

New ICS records in ASEP (1. 8. – 30. 9. 2023)

0575525 - ÚI 2024 RIV CZ cze B - Monography
Černý, David - Hakl, František - Hříbek, T. - Hvorecký, J. - Kolaříková, L. - Mareková, M. - Novotný, D. - Pelikán, Emil - Procházka, D. - Trčka, M. - Wiedermann, Jiří
Máme se BÁT umělé inteligence?.
Praha: The Karel Čapek Center for Values in Science and Technology (Centrum Karla Čapka pro studium hodnot ve vědě a technice), 2023. ISBN 978-80-87136-23-2
Institutional support: RVO:67985807
Keywords : artificial intelligence * umělá inteligence * popularizace vědy * popularisation of science
https://www.cevast.org/files/news/mmesebtai_final.pdf

Umělá inteligence je poslední dobou takřka všudypřítomná. Kromě nadšení a touhy objevovat její nové dovednosti však v nemálo lidech vzbuzuje i obavy. Někteří autoři se dokonce domnívají, že umělá inteligence představuje existenční riziko, podle některých dokonce riziko nejvyšší. V publikaci Máme se bát umělé inteligence se pokoušíme poněkud zmírnit obavy, které současné pokroky na poli umělé inteligence mohou vzbuzovat. Snažíme se ukázat, že hlavním problémem není samotná umělá inteligence, ale naše pasivita. Chtěli bychom tak přispět k současné diskusi a současně ji směřovat od AI ke způsobům, jakým jejích systémů využíváme. Umělou inteligenci můžeme chápat jako úžasný nástroj a kognitivní a fyzické rozšíření nás samotných. Aby ale tento nástroj dobře fungoval, musíme se naučit používat ho rozumně, moudře a morálně správně.
Permanent Link: https://hdl.handle.net/11104/0345287

0574286 - ÚI 2024 RIV US eng J - Journal Article
Dallmer-Zerbe, Isa - Jajcay, Nikola - Chvojka, J. - Janča, R. - Ježdík, P. - Kršek, P. - Marusič, P. - Jiruška, P. - Hlinka, Jaroslav
Computational modeling allows unsupervised classification of epileptic brain states across species.
Scientific Reports. Roč. 13, August 2023 (2023), č. článku 13436. ISSN 2045-2322. E-ISSN 2045-2322
R&D Projects: GA ČR(CZ) GA21-32608S; GA ČR(CZ) GA21-17564S; GA MZd(CZ) NU21-08-00533
Institutional support: RVO:67985807
OECD category: Neurosciences (including psychophysiology
Impact factor: 4.600, year: 2022
Method of publishing: Open access
DOI: 10.1038/s41598-023-39867-z

Current advances in epilepsy treatment aim to personalize and responsively adjust treatment parameters to overcome patient heterogeneity in treatment efficiency. For tailoring treatment to the individual and the current brain state, tools are required that help to identify the patient- and time-point-specific parameters of epilepsy. Computational modeling has long proven its utility in gaining mechanistic insight. Recently, the technique has been introduced as a diagnostic tool to predict individual treatment outcomes. In this article, the Wendling model, an established computational model of epilepsy dynamics, is used to automatically classify epileptic brain states in intracranial EEG from patients (n = 4) and local field potential recordings from in vitro rat data (high-potassium model

of epilepsy, n = 3). Five-second signal segments are classified to four types of brain state in epilepsy (interictal, preonset, onset, ictal) by comparing a vector of signal features for each data segment to four prototypical feature vectors obtained by Wendling model simulations. The classification result is validated against expert visual assessment. Model-driven brain state classification achieved a classification performance significantly above chance level (mean sensitivity 0.99 on model data, 0.77 on rat data, 0.56 on human data in a four-way classification task). Model-driven prototypes showed similarity with data-driven prototypes, which we obtained from real data for rats and humans. Our results indicate similar electrophysiological patterns of epileptic states in the human brain and the animal model that are well-reproduced by the computational model, and captured by a key set of signal features, enabling fully automated and unsupervised brain state classification in epilepsy.
Permanent Link: https://hdl.handle.net/11104/0344628

0575500 - ÚI 2024 GB eng J - Journal Article
Moraschini, T. - Wannenburg, Johann Joubert - Yamamoto, Kentarô
Elementary Equivalence in Positive Logic via Prime Products.
Journal of Symbolic Logic. Online 05 July 2023 (2023). ISSN 0022-4812. E-ISSN 1943-5886
Institutional support: RVO:67985807
Keywords : Keisler isomorphism theorem * positive model theory * prime product * positively existentially closed model * h-inductive theory
Impact factor: 0.600, year: 2022
Method of publishing: Limited access
https://dx.doi.org/10.1017/jsl.2023.50
DOI: 10.1017/jsl.2023.50

We introduce prime products as a generalization of ultraproducts for positive logic. Prime products are shown to satisfy a version of Łoś's Theorem restricted to positive formulas, as well as the following variant of the Keisler Isomorphism Theorem: under the generalized continuum hypothesis, two models have the same positive theory if and only if they have isomorphic prime powers of ultrapowers.
Permanent Link: https://hdl.handle.net/11104/0345261

0574133 - ÚI 2024 NL eng J - Journal Article
Yaseen, M. - Abbas, S. - Latif, Yasir
Evaluating the efects of soil physicochemical properties under diferent land use types in the arid zones of Pakistan.
ENVIRONMENT DEVELOPMENT AND SUSTAINABILITY. Online 03 August 2023 (2023). ISSN 1387-585X. E-ISSN 1573-2975
Institutional support: RVO:67985807
Keywords : Land use * Soil fertility * Physiochemical properties * Arid climate, sustainable agriculture
Impact factor: 4.900, year: 2022
Method of publishing: Limited access
https://doi.org/10.1007/s10668-023-03662-7
DOI: 10.1007/s10668-023-03662-7

Land use change has become a major issue since the turn of the twentieth century due to global warming, particularly the conversion of the natural forest area into agricultural land and bare land. Such changes in different land types are major threats to physiochemical soil features. However, the

effects of soil physicochemical properties under different land use types were evaluated in the arid zones of Pakistan. The soil samples were taken from three depths 0–20 cm, 20–40 cm, and 40–60 cm into three land use types (forest, cultivated, and grazing land). To estimate the physiochemical properties of soil, the samples were tested in the laboratory through analytical procedures of the atomic absorption spectrometer. The results revealed that the fertility of the soil was classified into four major groups very low, low, medium, and high fertile soil. The findings indicated that 66.95% sand and 23.91% soil elements were analyzed in the forest layer and 36.8% clay elements in the subsurface layer of cultivated land. The outcomes of the survey also showed that high (58.29%) and low (49.14%) amounts of total potassium were measured in cultivated and forest land areas of arid regions of Pakistan, respectively. In addition, about 53% of all land types were categorized into low organic matter division areas. The high amount of total nitrogen nutrients (0.12%) was found in the cultivated land and the lowest (0.003%) in the forest land. Comparatively, high potassium (K) 93.15 mg kg-1 was noted in the cultivated land. Moreover, Mn > Fe > Cu > Zn order of the nutrient amount was assessed over arid climate for all land use types over arid regions of Pakistan. Conclusively, this study will help predict the soil potential for sustainable agriculture and a green economy that boosts land use planning and development.
Permanent Link: https://hdl.handle.net/11104/0344480
Research data: Springer supplementary material

0574249 - ÚI 2024 RIV eng J - Journal Article
Gampenrieder, S. - Dezentje, V. - Lambertini, M. - de Nonneville, A. - Marhold, M. - Le Du, F. - Salgado, A. - Costa, D. - Batista, M. V. - Ruche, N. C. - Tinchon, C. - Petzer, A. - Blondeaux, E. - Del Mastro, L. - Targato, G. - Bertucci, F. - Goncalves, A. - Viret, F. - Bartsch, R. - Mannsbart, C. - Deleuze, A. - Robert, L. - Serrano, C. - Cortes, M. G. - Sampaio-Alves, M. - Vitorino, M. - Pecen, Ladislav - Singer, C. - Harbeck, N. - Rinnerthaler, G. - Greil, R.
Influence of HER2 expression on prognosis in metastatic triple-negative breast cancerdresults from an international, multicenter analysis coordinated by the AGMT Study Group.
ESMO OPEN. Roč. 8, č. 1 (2023), č. článku 100747. E-ISSN 2059-7029
Institutional support: RVO:67985807
Keywords : triple-negative breast cancer * metastatic * HER2-low * OS * real-world data * prognosis
Impact factor: 7.300, year: 2022
Method of publishing: Open access
https://dx.doi.org/10.1016/j.esmoop.2022.100747
DOI: 10.1016/j.esmoop.2022.100747

Background: Triple-negative breast cancer (TNBC) is associated with poor prognosis, and new treatment options are urgently needed. About 34%-39% of primary TNBCs show a low expression of human epidermal growth factor receptor 2 (HER2-low), which is a target for new anti-HER2 drugs. However, little is known about the frequency and the prognostic value of HER2-low in metastatic TNBC.Patients and methods: We retrospectively included patients with TNBC from five European countries for this international, multicenter analysis. Triple-negativity had to be shown in a metastatic site or in the primary breast tumor diagnosed simultaneously or within 3 years before metastatic disease. HER2-low was defined as immunohistochemically (IHC) 1+ or 2+ without ER882 gene amplification. Survival probabilities were calculated by the KaplaneMeier method, and multivariable hazard ratios (HRs) were estimated by Cox regression models.Results: In total, 691 patients, diagnosed between January 2006 and February 2021, were assessable. The incidence of HER2-low was 32.0% [95% confidence interval (CI) 28.5% to 35.5%], with similar proportions in metastases (n = 265; 29.8%) and primary tumors (n = 425; 33.4%; P = 0.324). The median overall survival (OS) in HER2-low and HER2-0 TNBC was 18.6 and 16.1 months, respectively (HR 1.00; 95% CI 0.83-1.19; P

= 0.969). Similarly, in multivariable analysis, HER2-low had no significant impact on OS (HR 0.95; 95% CI 0.79-1.13; P = 0.545). No difference in prognosis was observed between HER2 IHC 0/1+ and IHC 2+ tumors (HR 0.89; 95% CI 0.69-1.17; P = 0.414). Conclusions: In this large international dataset of metastatic TNBC, the frequency of HER2-low was 32.0%. Neither in univariable nor in multivariable HER2-low showed influence on OS.
Permanent Link: https://hdl.handle.net/11104/0344588

0574357 - ÚI 2024 RIV NL eng J - Journal Article
Vojta, J. - Brabec, Marek - Skokanová, H. - Kuča, K.
Legacies of historical management practices in the large-scale distribution pattern of oak-hornbeam woodlands in Czechia.
Forest Ecology and Management. Roč. 545, October 2023 (2023), č. článku 121241. ISSN 0378-1127. E-ISSN 1872-7042
Institutional support: RVO:67985807
Keywords : Coppicing * GAMM * NATURA 2000 habitats * Naturalness * Potential natural vegetation * Woodland grazing
OECD category: Statistics and probability
Impact factor: 3.700, year: 2022
Method of publishing: Limited access
DOI: 10.1016/j.foreco.2023.121241

Historical woodland management practices like coppicing and grazing have formed the diversity and structure of oak-hornbeam woodlands. We analysed large-scale, high-resolution spatial data on the distribution of woodland communities in Czechia to find out whether past human impacts influenced the distribution of oak-hornbeam woodlands in present-day landscapes. We tested the relation of oak-hornbeam woodlands to the past and current settlement distribution pattern, woodland continuity since about 1840 and distance to the woodland edge, on top of natural environmental predictors, using generalized additive mixed-effects models (GAMM). The results show a positive association between oak-hornbeam woodlands and current towns and villages, but only at higher elevations at the edge of the supposed natural distribution of oak-hornbeam woodlands. This effect was enhanced in the vicinity of old (pre-1450) settlements. By contrast, we found no effect of distance to current settlements in the elevational optimum of oak-hornbeam woodlands and even a decreasing trend of oak-hornbeam at the lowest elevations. In addition, oak-hornbeam stands often occur on former agricultural land and close to the woodland edges. Our results do not contradict the traditional view of oak-hornbeam woodlands as natural vegetation in the lowlands and at middle elevations. However, they clearly show that this natural range was extended to higher elevations by past human influence, probably at the expense of beech woodlands. Additionally, historical woodland management probably supported thermophilous oak woodlands at the lowest elevations. These past human activities are still detectable in the current distribution pattern of woodland communities.
Permanent Link: https://hdl.handle.net/11104/0344694

0574360 - ÚI 2024 RIV CH eng J - Journal Article
Svobodová, A. - Horváth, V. - Balogh, L. - Žemličková, M. - Fiala, R. - Burkert, J. - Brabec, Marek - Stadler, P. - Lindner, J. - Bednář, J. - Jirsová, K.
Outcome of Application of Cryopreserved Amniotic Membrane Grafts in the Treatment of Chronic Nonhealing Wounds of Different Origins in Polymorbid Patients: A Prospective Multicenter Study.
Bioengineering. Roč. 10, č. 8 (2023), č. článku 900. ISSN 2306-5354
Institutional support: RVO:67985807

Keywords : nonhealing wounds * cryopreserved amniotic membrane * polymorbid patients * pain
OECD category: Statistics and probability
Impact factor: 4.600, year: 2022
Method of publishing: Open access
https://dx.doi.org/10.3390/bioengineering10080900
DOI: 10.3390/bioengineering10080900

To compare the therapeutic efficacy of cryopreserved amniotic membrane (AM) grafts and standard of care (SOC) in treating nonhealing wounds (NHW) through a prospective multicenter clinical trial, 42 patients (76% polymorbid) with 54 nonhealing wounds of various etiologies (mainly venous) and an average baseline size of 20 cm2 were included. All patients were treated for at least 6 weeks in the center before they were involved in the study. In the SOC group, 29 patients (36 wounds) were treated. If the wound healed less than 20% of the baseline size after 6 weeks, the patient was transferred to the AM group (35 patients, 43 wounds). Weekly visits included an assessment of the patient's condition, photo documentation, wound debridement, and dressing. Quality of life and the pain degree were subjectively reported by patients. After SOC, 7 wounds were healed completely, 1 defect partially, and 28 defects remained unhealed. AM application led to the complete closure of 24 wounds, partial healing occurred in 10, and 9 remained unhealed. The degree of pain and the quality of life improved significantly in all patients after AM application. This study demonstrates the effectiveness of cryopreserved AM grafts in the healing of NHW of polymorbid patients and associated pain reduction
Permanent Link: https://hdl.handle.net/11104/0344699

0574131 - ÚI 2024 GB eng J - Journal Article
Badia, G. - Běhounek, L. - Cintula, Petr - Tedder, A.
Relevant Consequence Relations: An Invitation.
Review of Symbolic Logic. Online 30 June 2023 (2023). ISSN 1755-0203. E-ISSN 1755-0211
R&D Projects: GA ČR(CZ) GA22-01137S; GA ČR(CZ) GA18-00113S
Institutional support: RVO:67985807
Keywords : relevant entailment * substructural logics * multiset consequence relations * multiple conclusions
Impact factor: 0.600, year: 2022
Method of publishing: Limited access
DOI: 10.1017/S1755020323000205

We generalize the notion of consequence relation standard in abstract treatments of logic to accommodate intuitions of relevance. The guiding idea follows the use criterion, according to which in order for some premises to have some conclusion(s) as consequence(s), the premises must each be used in some way to obtain the conclusion(s). This relevance intuition turns out to require not just a failure of monotonicity, but also a move to considering consequence relations as obtaining between multisets. We motivate and state basic definitions of relevant consequence relations, both in single conclusion (asymmetric) and multiple conclusion (symmetric) settings, as well as derivations and theories, guided by the use intuitions, and prove a number of results indicating that the definitions capture the desired results (at least in many cases).
Permanent Link: https://hdl.handle.net/11104/0344479

0574237 - ÚI 2024 RIV US eng C - Conference Paper (international conference)
Fernández-Duque, David - Gougeon, Q.
Fixed Point Logics on Hemimetric Spaces.
38th Annual ACM/IEEE Symposium on Logic in Computer Science (LICS) Proceedings. IEEE, 2023, č. článku 190687. ISBN 979-8-3503-3588-0.
[LICS 2023: Annual ACM/IEEE Symposium on Logic in Computer Science /38./. Boston (US), 26.06.2023-29.06.2023]
R&D Projects: GA ČR(CZ) GA22-01137S
Institutional support: RVO:67985807
https://dx.doi.org/10.1109/LICS56636.2023.10175784
DOI: 10.1109/LICS56636.2023.10175784

The μ-calculus can be interpreted over metric spaces and is known to enjoy, among other celebrated properties, variants of the McKinsey-Tarski completeness theorem and of Dawar and Otto's modal characterization theorem. In its topological form, this theorem states that every topological fixed point may be defined in terms of the tangled derivative, a polyadic generalization of Cantor's perfect core. However, these results fail when spaces not satisfying basic separation axioms are considered, in which case the base modal logic is not the well-known K4, but the weaker wK4.In this paper we show how these shortcomings may be overcome. First, we consider semantics over the wider class of hemimetric spaces, and obtain metric completeness results for wK4 and related logics. In this setting, the Dawar-Otto theorem still fails, but we argue that this is due to the tangled derivative not being suitably defined for general application in arbitrary topological spaces. We thus introduce the hybrid tangle, which coincides with the tangled derivative over metric spaces but is better behaved in general. We show that only the hybrid tangle suffices to define simulability of finite structures, a key 'test case' for an expressively complete fragment of the μ-calculus.
Permanent Link: https://hdl.handle.net/11104/0344576

0574179 - ÚI 2024 RIV US eng C - Conference Paper (international conference)
Sedlár, Igor
Kleene Algebra With Tests for Weighted Programs.
2023 IEEE 53rd International Symposium on Multiple-Valued Logic (ISMVL). Proceedings. Piscataway: IEEE, 2023, s. 111-116. ISBN 978-1-6654-6416-1. ISSN 2378-2226.
[ISMVL 2023: IEEE International Symposium on Multiple-Valued Logic /53./. Matsue (JP), 22.05.2023-24.05.2023]
R&D Projects: GA ČR(CZ) GA22-16111S
Institutional support: RVO:67985807
Keywords : Kleene algebra with tests * program equivalence * program semantics * regular programs * weighted programs
https://dx.doi.org/10.1109/ISMVL57333.2023.00031
DOI: 10.1109/ISMVL57333.2023.00031

Weighted programs generalize probabilistic programs and offer a framework for specifying and encoding mathematical models by means of an algorithmic representation. Kleene algebra with tests is an algebraic formalism based on regular expressions with applications in proving program equivalence. We extend the language of Kleene algebra with tests so that it is sufficient to formalize reasoning about a simplified version weighted programs. We introduce relational semantics for the extended language, and we generalize the relational semantics to an appropriate extension of Kleene algebra with tests, called Kleene algebra with weights and tests. We demonstrate by means of an example that Kleene algebra with weights and tests offers a simple algebraic framework for reasoning about equivalence and optimal runs of weighted programs.
Permanent Link: https://hdl.handle.net/11104/0344526

0574098 - ÚI 2024 RIV CH eng C - Conference Paper (international conference)
Lipparini, E. - Ratschan, Stefan
Satisfiability of Non-linear Transcendental Arithmetic as a Certificate Search Problem.
NASA Formal Methods: 15th International Symposium, NFM 2023 Proceedings. Springer, 2023 - (Rozier, K.; Chaudhuri, S.), s. 472-488. Lecture Notes in Computer Science, 13903. ISBN 978-3-031-33169-5. ISSN 0302-9743.
[NFM 2023: NASA Formal Methods International Symposium /15./. Houston (US), 16.05.2023-18.05.2023]
R&D Projects: GA ČR(CZ) GA21-09458S
Institutional support: RVO:67985807
Keywords : SAT modulo theories * constraint solving * formal verification
OECD category: Computer sciences, information science, bioinformathics (hardware development to be 2.2, social aspect to be 5.8)
https://dx.doi.org/10.1007/978-3-031-33170-1_29
DOI: 10.1007/978-3-031-33170-1_29

For typical first-order logical theories, satisfying assignments have a straightforward finite representation that can directly serve as a certificate that a given assignment satisfies the given formula. For non-linear real arithmetic with transcendental functions, however, no general finite representation of satisfying assignments is available. Hence, in this paper, we introduce a different form of satisfiability certificate for this theory, formulate the satisfiability verification problem as the problem of searching for such a certificate, and show how to perform this search in a systematic fashion. This does not only ease the independent verification of results, but also allows the systematic design of new, efficient search techniques. Computational experiments document that the resulting method is able to prove satisfiability of a substantially higher number of benchmark problems than existing methods.
Permanent Link: https://hdl.handle.net/11104/0344454

0574367 - ÚI 2024 eng A - Abstract
Šileikis, Matas
Graph flip processes related to dynamical systems.
[NORDSTAT 2023. Nordic Conference in Mathematical Statistics /29./. Gothenburg, 19.06.2023-23.06.2023]
Method of presentation: Zvaná přednáška
Event organizer: Chalmers University of Technology and the University of Gothenburg
URL events: https://nordstat2023.org/
Institutional support: RVO:67985807
https://nordstat2023.org/wp-content/uploads/2023/06/Booklet_withAbstracts.pdf
Permanent Link: https://hdl.handle.net/11104/0344704

0575688 - PSÚ 2024 eng A - Abstract
Kollerová, Lenka - Lintner, T. - Klocek, Adam - Ropovik, I. - Hlinka, Jaroslav - Strohmeier, D.
Healthy context paradox: Peer acceptance and peer rejection of victimized early adolescents in different classrooms.
[European Conference on Developmental Psychology (ECDP) 2023 /20./. Turku, 28.08.2023-01.09.2023]
Method of presentation: Prezentace
URL events: https://sites.utu.fi/ecdp2023/

R&D Projects: GA ČR(CZ) GA23-06289S; GA MŠk(CZ) LX22NPO5101
Institutional support: RVO:68081740 ; RVO:67985807
Keywords : adolescence * bullying * healthy context paradox
OECD category: Psychology (including human - machine relations)

Past research showed that victimized students experience lower levels of maladjustment in classrooms with higher numbers of victimized students. Therefore, the present study verified the hypotheses that in early adolescents, classroom victimization rate would weaken the negative association between victimization and peer acceptance and the positive association between victimization and peer rejection over a half year interval. The sample consisted of 751 elementary school students (51% female, Mage = 12.93±.41) clustered in 39 classes (with average class size of 24±4 students). First, linear mixed models confirmed the expected interactive effects of individual victimization and classroom victimization rate on peer acceptance and peer rejection. The found interactive effects indicated that victimized students became less accepted and more rejected over time, but these associations were weaker in classrooms with higher victimization rate. Further, the findings from the linear mixed models were complemented by insights from social network analysis. Stochastic actor-oriented modeling were applied to investigate the role of defenders and other victimized students in the changes of peer status of victimized students. In sum, the study brought longitudinal support for the healthy context paradox for both peer acceptance and peer rejection.
Permanent Link: https://hdl.handle.net/11104/0345486

0574294 - ÚI 2024 JP eng A - Abstract
Kalina, Jan
Testing Exchangeability of Multivariate Distributions.
EcoSta 2023 Programme and Abstracts. Waseda: ECOSTA Econometrics and Statistics, 2023. s. 48-48. ISBN 978-9925-7812-2-5.
[EcoSta 2023: International Conference on Econometrics and Statistics /6./. 01.08.2023-03.08.2023, Waseda]
Institutional support: RVO:67985807
Permanent Link: https://hdl.handle.net/11104/0344635

0574025 - ÚI 2024 CZ cze V - Research Report
Architektonická služba Voršilská
Studie a projektový úkol CVS ČSAV: Výstavba centrálně výpočetního střediska AV ČR.
Praha: Československá akademie věd, 1974. Výzkumná zpráva, V-0.
Permanent Link: https://hdl.handle.net/11104/0344386