

Záznamy vložené do ASEP za UI (1. 1. – 31. 1. 2023)

New ICS records in ASEP (1. 1. – 31. 1. 2023)

0567232 - ÚI 2023 eng J - Journal Article

Koutná, M. - Havrdová, E. - [Netík, Jan](#) - Pour, M.

Evaluation of a Parenting Program for Disadvantaged Families in the Czech Republic.

Research on Social Work Practice. online January 3 2023 (2023). ISSN 1049-7315. E-ISSN 1552-7581

Impact factor: 1.984, year: 2021

[DOI: 10497315221144000](https://doi.org/10.10497315221144000)

PURPOSE: This impact evaluation report describes the effects of the "Parenting Program for Disadvantaged Families" in the Czech Republic. We provide a detailed look at the quantitative data on treatment and control families in a program delivered by social workers to reduce the risk of children's misconduct. **METHOD:** The study specifies the results of two waves of quantitative research based on Parenting Young Children (PARYC), Strengths and Difficulties Questionnaire (SDQ), and items measuring parents' attitudes toward punishment of their children. **RESULTS:** The results of parental self-reported competencies and parent-reported children's behavior indicate that there was a statistically significant impact of the intervention. **Discussion:** There was a large effect on Supporting Positive Behavior (PARYC), and Prosocial Behavior and Peer Relationship dimensions of the SDQ. Parental practices and attitudes toward punishment are further explored, although the conclusions remain ambiguous.

Permanent Link: <https://hdl.handle.net/11104/0338509>

0567437 - ÚI 2023 RIV eng J - Journal Article

Gampenrieder, S. - Dezentje, V. - Lambertini, M. - de Nonneville, A. - Marhold, M. - Le Du, F. - Cortés Salgado, A. - Alpuim Costa, D. - Vaz Batista, M. - Chic Ruché, N. - Tinchon, C. - Petzer, A. - Blondeaux, E. - Del Mastro, L. - Targato, G. - Bertucci, F. - Gonçalves, A. - Viret, F. - Bartsch, R. - Mannsbart, C. - Deleuze, A. - Robert, L. - Saavedra Serrano, C. - Gion Cortés, M. - Sampaio-Alves, M. - Vitorino, M. - [Pecen, Ladislav](#) - Singer, C. - Harbeck, N.

Influence of HER2 expression on prognosis in metastatic triple-negative breast cancer—results 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: 6.883, year: 2021

Method of publishing: Open access

<https://dx.doi.org/10.1016/j.esmoop.2022.100747>

[DOI: 10.1016/j.esmoop.2022.100747](https://doi.org/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 ERBB2 gene amplification. Survival probabilities were calculated by the Kaplan–Meier 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 analysis HER2-low showed any influence on OS.

Permanent Link: <https://hdl.handle.net/11104/0338693>

0567202 - ÚI 2023 RIV US eng J - Journal Article

Bílková, Marta - **Frittella, S.** - **Kozhemiachenko, D.** - **Majer, Ondrej**

Qualitative reasoning in a two-layered framework.

International Journal of Approximate Reasoning. Roč. 154, March 2023 (2023), s. 84-108. ISSN 0888-613X. E-ISSN 1873-4731

R&D Projects: GA ČR(CZ) GA22-01137S

Institutional support: RVO:67985807

Keywords : Qualitative probabilities * Comparative belief * Two-layered modal logics * Gödel logic * Belnap–Dunn logic * Paraconsistent logics

Impact factor: 4.452, year: 2021

Method of publishing: Limited access

<https://dx.doi.org/10.1016/j.ijar.2022.12.011>

[DOI: 10.1016/j.ijar.2022.12.011](https://doi.org/10.1016/j.ijar.2022.12.011)

The reasoning with qualitative uncertainty measures involves comparative statements about events in terms of their likeliness without necessarily assigning an exact numerical value to these events. The paper is divided into two parts. In the first part, we formalise reasoning with the qualitative counterparts of capacities, belief functions, and probabilities, within the framework of two-layered logics. Namely, we provide two-layered logics built over the classical propositional logic using a unary belief modality B that connects the inner layer to the outer one where the reasoning is formalised by means of Gödel logic. We design their Hilbert-style axiomatisations and prove their completeness. In the second part, we discuss the paraconsistent generalisations of the logics for qualitative uncertainty that take into account the case of the available information being contradictory or inconclusive.

Permanent Link: <https://hdl.handle.net/11104/0338479>

0567128 - ÚI 2023 RIV CH eng J - Journal Article

Hrba, M. - **Maciak, M.** - **Peštová, Barbora** - **Pešta, M.**

Bootstrapping Not Independent and Not Identically Distributed Data.

Mathematics. Roč. 10, č. 24 (2022), č. článku 4671. E-ISSN 2227-7390

R&D Projects: GA ČR(CZ) GA21-03658S

Institutional support: RVO:67985807

Keywords : bootstrap * statistical inference * asymptotic normality * weakly dependent data * not identically distributed data * moving block bootstrap * law of large numbers * central limit theorem * psychometric evaluation * non-life insurance

Impact factor: 2.592, year: 2021

Method of publishing: Open access

[DOI: 10.3390/math10244671](https://doi.org/10.3390/math10244671)

Classical normal asymptotics could bring serious pitfalls in statistical inference, because some parameters appearing in the limit distributions are unknown and, moreover, complicated to estimated (from a theoretical as well as computational point of view). Due to this, plenty of stochastic approaches for constructing confidence intervals and testing hypotheses cannot be directly applied. Bootstrap seems to be a plausible alternative. A methodological framework for bootstrapping not independent and not identically distributed data is presented together with theoretical justification of the proposed procedures. Among others, bootstrap laws of large numbers and central limit theorems are provided. The developed methods are utilized in insurance and psychometry.

Permanent Link: <https://hdl.handle.net/11104/0338390>

0567044 - ÚI 2023 RIV eng J - Journal Article

Constantinides, C. - Han, L. K. M. - Alloza, C. - Tomeček, David ... Total 93 authors

Brain ageing in schizophrenia: evidence from 26 international cohorts via the ENIGMA Schizophrenia consortium.

Molecular Psychiatry. 09 December 2022 (2022). ISSN 1359-4184. E-ISSN 1476-5578

Institutional support: RVO:67985807

Impact factor: 13.437, year: 2021

Method of publishing: Open access

<https://dx.doi.org/10.1038/s41380-022-01897-w>

[DOI: 10.1038/s41380-022-01897-w](https://doi.org/10.1038/s41380-022-01897-w)

Schizophrenia (SZ) is associated with an increased risk of life-long cognitive impairments, age-related chronic disease, and premature mortality. We investigated evidence for advanced brain ageing in adult SZ patients, and whether this was associated with clinical characteristics in a prospective meta-analytic study conducted by the ENIGMA Schizophrenia Working Group. The study included data from 26 cohorts worldwide, with a total of 2803 SZ patients (mean age 34.2 years; range 18–72 years; 67% male) and 2598 healthy controls (mean age 33.8 years, range 18–73 years, 55% male). Brain-predicted age was individually estimated using a model trained on independent data based on 68 measures of cortical thickness and surface area, 7 subcortical volumes, lateral ventricular volumes and total intracranial volume, all derived from T1-weighted brain magnetic resonance imaging (MRI) scans. Deviations from a healthy brain ageing trajectory were assessed by the difference between brain-predicted age and chronological age (brain-predicted age difference [brain-PAD]). On average, SZ patients showed a higher brain-PAD of +3.55 years (95% CI: 2.91, 4.19; I² = 57.53%) compared to controls, after adjusting for age, sex and site (Cohen's d = 0.48). Among SZ patients, brain-PAD was not associated with specific clinical characteristics (age of onset, duration of illness, symptom severity, or antipsychotic use and dose). This large-scale collaborative study suggests advanced structural brain ageing in SZ. Longitudinal studies of SZ and a range of mental and somatic health outcomes will help to further evaluate the clinical implications of increased brain-PAD and its ability to be influenced by interventions.

Permanent Link: <https://hdl.handle.net/11104/0338310>

0567441 - ÚI 2023 RIV CH eng J - Journal Article

Dropka, N. - Tang, X. - Chappa, G. K. - Holeňa, Martin

Smart Design of Cz-Ge Crystal Growth Furnace and Process.

Crystals. Roč. 12, č. 12 (2022), č. článku 1764. ISSN 2073-4352. E-ISSN 2073-4352

Institutional support: RVO:67985807

Keywords : Czochralski Ge growth * CFD training data * furnace design * process design * regression tree * correlation coefficient

Impact factor: 2.670, year: 2021

Method of publishing: Open access

<https://dx.doi.org/10.3390/cryst12121764>

[DOI: 10.3390/cryst12121764](https://doi.org/10.3390/cryst12121764)

The aim of this study was to evaluate the potential of the machine learning technique of decision trees to understand the relationships among furnace design, process parameters, crystal quality, and yield in the case of the Czochralski growth of germanium. The ultimate goal was to provide the range of optimal values of 13 input parameters and the ranking of their importance in relation to their impact on three output parameters relevant to process economy and crystal quality. Training data were provided by CFD modelling. The variety of data was ensured by the Design of Experiments method. The results showed that the process parameters, particularly the pulling rate, had a substantially greater impact on the crystal quality and yield than the design parameters of the furnace hot zone. Of the latter, only the crucible size, the axial position of the side heater, and the material properties of the radiation shield were relevant.

Permanent Link: <https://hdl.handle.net/11104/0338696>

0567694 - ÚVGZ 2023 RIV CZ cze J - Journal Article

Vaňo, Simeon - Bašta, P. - **Suchá, Lenka** - **Geletič, Jan** - **Jančovič, M.** - **Duchková, Helena**

Zranitelnost vůči teplotním extrémům: čeká nás nový život v rozpáleném městě?

[Vulnerability to extreme temperatures: shall we expect to live in hot cities?]

Urbanismus a územní rozvoj. Roč. 2022, č. 5 (2022), s. 22-29. ISSN 1212-0855

R&D Projects: GA TA ČR(CZ) TL01000238

Institutional support: RVO:86652079 ; RVO:67985807

Keywords : climate change * adaptation of cities * temperature extremes * methodology * Brno

OECD category: Climatic research; Climatic research (UIVT-O)

Method of publishing: Limited access

<https://www.uur.cz/casopis-uaur/cisla-casopisu-journal-issues/2022/52022/?fbclid=IwAR0s4ToFyWk4iKMuxgowNeGh3sLp5xHZulQX8Q4H7egNCk37W-N0tCmRPE>

Klimatická změna a zejména extrémní vedra představují pro města bezprecedentní výzvu, která ohrožuje budoucí prosperitu, zdraví a blahobyt městského obyvatelstva. Přízpůsobení se klimatu je proto jedním z ústředních témat udržitelných měst a společností. Tento článek představuje metodický přístup pro hodnocení zranitelnosti městského obyvatelstva extrémními horky do roku 2050 prezentovaný na příkladu města Brna. Hodnocení založené na rozmanitosti budoucích klimatických a socioekonomických scénářů a na rozsahu implementace adaptačních opatření vedlo k identifikaci zranitelných lokalit po celém městě. Výsledky naznačují, že globální klimatické scénáře, rozsah zastavěné oblasti a hustota obyvatelstva mají zásadní vliv na celkovou zranitelnost vůči extrémnímu teplu, ačkoli rozsáhlé provádění adaptačních opatření může zranitelnost podstatně snížit. Zavedené hodnocení zranitelnosti představuje důležitý nástroj podpory městského plánování, neboť poskytuje komplexní data o možném budoucím vývoji včetně adekvátních možností adaptace.

Climate change and especially extreme heat represent an unprecedented challenge for cities, threatening future prosperity, health and wellbeing of urban populations. Climate adaptation is therefore one of the central topics for sustainable cities and societies. This article introduces a methodological approach for assessment of urban population vulnerability to extreme heat until the year 2050, presented on the example of the city of Brno. The assessment, based on the variety of future climate and socioeconomic scenarios and on the extent of implementation of adaptation measures, led to identification of vulnerable localities across the city. Results suggest that global climate scenarios, extent of built up area and population density have major effects on overall vulnerability to extreme heat, although extensive implementation of adaptation measures can reduce vulnerability substantially. The introduced vulnerability assessment represents an important tool in support of urban planning, as it provides complex data on possible future developments including adequate adaptation options.

Permanent Link: <https://hdl.handle.net/11104/0338925>

0567047 - ÚI 2023 RIV US eng C - Conference Paper (international conference)

Balazia, M. - [Hlaváčková-Schindler, Kateřina](#) - Sojka, P. - Plant, C.

Interpretable Gait Recognition by Granger Causality.

2022 26th International Conference on Pattern Recognition (ICPR). Piscataway: IEEE, 2022, s. 1069-1075. ISBN 978-1-6654-9063-4. ISSN 1051-4651.

[ICPR 2022: International Conference on Pattern Recognition /26./, Montréal (CA), 21.08.2022-25.08.2022]

R&D Projects: GA ČR(CZ) GA19-16066S

Keywords : Measurement * Analytical models * Three-dimensional displays * Neural networks * Video surveillance * Skeleton * Motion capture

<https://dx.doi.org/10.1109/ICPR56361.2022.9956624>

[DOI: 10.1109/ICPR56361.2022.9956624](https://doi.org/10.1109/ICPR56361.2022.9956624)

Which joint interactions in the human gait cycle can be used as biometric characteristics? Most current methods on gait recognition suffer from the lack of inter-pretability. We propose an interpretable feature representation of gait sequences by the graphical Granger causal inference. Gait sequence of a person in the standardized motion capture format, constituting a set of 3D joint spatial trajectories, is envisaged as a causal system of joints interacting in time. We apply the graphical Granger model (GGM) to obtain the so-called Granger causal graph among joints as a discriminative and visually interpretable representation of a person's gait. We evaluate eleven distance functions in the GGM feature space by established classification and class-separability evaluation metrics. Our experiments indicate that, depending on the metric, the most appropriate distance functions for the GGM are the total norm distance and the Ky-Fan 1-norm distance. Experiments also show that the GGM is able to detect the most discriminative joint interactions and that it outperforms five related interpretable models in correct classification rate and in Davies-Bouldin index. The proposed GGM model can serve as a complementary tool for gait analysis in kinesiology or for gait recognition in video surveillance.

Permanent Link: <https://hdl.handle.net/11104/0338380>

0566801 - ÚI 2023 GB eng C - Conference Paper (international conference)

[Sedlár, Igor](#) - Vigiani, P.

Relevant Reasoners in a Classical World.

Advances in Modal Logic. Volume 14. London: College Publications, 2022 - (Fernández-Duque, D.; Palmigiano, A.; Pinchinat, S.), s. 697-718. ISBN 978-1-84890-413-2.

[AIML 2022: Advances in Modal Logic. Rennes (FR), 22.08.2022-25.08.2022]

R&D Projects: GA ČR(CZ) GA22-01137S

Institutional support: RVO:67985807

Keywords : epistemic logic * logical omniscience * non-normal worlds * relevant logic

<https://www.collegepublications.co.uk/aiml/?00011>

We develop a framework for epistemic logic that combines relevant modal logic with classical propositional logic. In our framework the agent is modeled as reasoning in accordance with a relevant modal logic while the propositional fragment of our logics is classical. In order to achieve this feature, we modify the relational semantics for relevant modal logics so that validity in a model is defined as satisfaction throughout a set of designated states that, as far as propositional connectives are concerned, behave like classical possible worlds. The main technical result of the paper is a modular completeness theorem parametrized by the relevant modal logic formalizing the agent's reasoning.

Permanent Link: <https://hdl.handle.net/11104/0338087>

0566289 - ÚTIA 2023 RIV CZ eng C - Conference Paper (international conference)

Papáček, Štěpán - Matonoha, Ctirad

TESTING THE METHOD OF MULTIPLE SCALES AND THE AVERAGING PRINCIPLE FOR MODEL PARAMETER ESTIMATION OF QUASIPERIODIC TWO TIME-SCALE MODELS.

Proceedings of Seminar: PANM 21 - Programs and Algorithms of Numerical Mathematics 21. Praha: Institute of Mathematics CAS Prague 2022, 2022 - (Chleboun, J.; Kůs, P.; Papež, J.; Rozložník, M.; Segeth, K.; Šístek, J.), s. 1-10

[Programs and Algorithms of Numerical Mathematics 21, PANM 21 /2022/. Jablonec nad Nisou (CZ), 19.06.2022-24.06.2022]

R&D Projects: GA ČR(CZ) GA21-03689S

Institutional support: RVO:67985556 ; RVO:67985807

Keywords : Dynamical system * Singular perturbation * Averaging * Parameter estimation * Slow-fast decomposition * Damped oscillations

OECD category: Applied mathematics; Pure mathematics (UIVT-O)

<http://library.utia.cas.cz/separaty/2023/TR/papacek-0566289.pdf>

[DOI: 10.21136/panm.2021.01](https://doi.org/10.21136/panm.2021.01)

Some dynamical systems are characterized by more than one timescale, e.g. two well separated time-scales are typical for quasiperiodic systems. The aim of this paper is to show how singular perturbation methods based on the slow-fast decomposition can serve for an enhanced parameter estimation when the slowly changing features are rigorously treated. Although the ultimate goal is to reduce the standard error for the estimated parameters, here we test two methods for numerical approximations of the solution of associated forward problem: (i) the multiple time-scales method, and (ii) the method of averaging. On a case study, being an under-damped harmonic oscillator containing two state variables and two parameters, the method of averaging gives well (theoretically predicted) results, while the use of multiple time-scales method is not suitable for our purposes.

Permanent Link: <https://hdl.handle.net/11104/0337768>

0566819 - ÚI 2023 IL eng C - Conference Paper (international conference)

Baltag, A. - Bezhanishvili, N. - Fernández-Duque, David

The Topology of Surprise.

Proceedings of the 19th International Conference on Principles of Knowledge Representation and Reasoning. Haifa: International Joint Conferences on Artificial Intelligence Organization, 2022 - (Kern-Isberner, G.; Lakemeyer, G.; Meyer, T.), s. 33-42. ISBN 978-1-956792-01-0. ISSN 2334-1033.

[KR2022: International Conference on Principles of Knowledge Representation and Reasoning /19./, Haifa (IL), 31.07.2022-05.08.2022]

Institutional support: RVO:67985807

<https://dx.doi.org/10.24963/kr.2022/4>

[DOI: 10.24963/kr.2022/4](https://doi.org/10.24963/kr.2022/4)

In this paper we present a topological epistemic logic, with modalities for knowledge (modeled as the universal modality), knowability (represented by the topological interior operator), and unknowability of the actual world. The last notion has a non-self-referential reading (modeled by Cantor derivative: the set of limit points of a given set) and a selfreferential one (modeled by Cantor's perfect core of a given set: its largest subset without isolated points). We completely axiomatize this logic, showing that it is decidable and PSPACE-complete, and we apply it to the analysis of a famous epistemic puzzle: the Surprise Exam Paradox.

Permanent Link: <https://hdl.handle.net/11104/0338097>

0567136 - ÚI 2023 RIV CZ eng L2 - Special Maps

[Geletič, Jan](#) - [Daniel, Milan](#) - [Krč, Pavel](#) - [Resler, Jaroslav](#) - [Kozhevnikov, S.](#) - [Svítek, M.](#)
Evropská Street Resiliency.

Internal code: TN01000024/9-V2 ; 2022

Technical parameters: Výsledek využívá výsledků mikro-klimatického modelování ve formátu NetCDF a pomocí skriptu v open-source software (R nebo Python) počítá index zranitelnosti pro Evropskou ulici. Unikátní je prostorová variabilita a kombinace proměnných, ze kterých je index počítán - zahrnuje jak biometeorologické indexy, tak koncentrace znečišťujících látek.

Economic parameters: Výsledek je využitelný jak při přípravě nových developerských projektů připravovaných na Evropské ulici, tak pro učení priorit dopravních opatření případně pro odůvodnění nasazení inteligentních dopravních systémů nebo nízko-emisních vozidel veřejné dopravy.

R&D Projects: GA TA ČR(CZ) TN01000024

Institutional support: RVO:67985807

Keywords : PALM * zranitelnost * Evropská * tepelný komfort * znečištění ovzduší * vulnerability * Evropska Street * thermal comfort * air quality

OECD category: Meteorology and atmospheric sciences

Zranitelnost obyvatel měst vůči klimatickým změnám byla definována jako soubor proměnných, které hrají nejdůležitější roli ve středoevropských městech. První datová sada souvisí s tepelným komfortem člověka, kdy jsme použili indexy UTCI (Universal Thermal Climate Index), PET (Physiological Equivalent Temperature) a PT (Perceived Temperature). Druhá sada souvisí se znečištěním ovzduší. Zahrnuje emise a transport pevných částic (PM10, PM2.5), oxidů dusíku (NO, NO2) a ozonu (O3) z místních zdrojů (např. doprava, vytápění, průmysl atd.) a doprovodný transport. Jejich kombinací vznikla zranitelnost v časovém kroku 10min, 1, 3 a 24h.

We defined vulnerability of urban inhabitants to climate change as a set of variables, which play the most important role in central European cities. First set is related to human thermal comfort, when we use UTCI (Universal Thermal Climate Index), PET (Physiological Equivalent Temperature) and PT (Perceived Temperature) indices. Second set is related to air pollution. It includes emissions and transport of particulate matter (PM10, PM2.5), nitrogen oxides (NO, NO2) and ozone (O3) from local sources (e.g. transportation, heating, industry etc.) and background transport. Thanks to combination of these datasets a vulnerability map was delineated (10min, 1, 3 and 24h averages).

Permanent Link: <https://hdl.handle.net/11104/0338409>

Scientific data in ASEP :

Evropská Street Resiliency

0567160 - ÚI **DATA Scientific data**

[Geletič, Jan](#) - [Daniel, Milan](#) - [Krč, Pavel](#) - [Resler, Jaroslav](#) - [Kozhevnikov, S.](#) - [Svítek, M.](#)
Evropská Street Resiliency.

Archiv s daty obsahuje výsledný index zranitelnosti pro letní simulaci současného stavu, tzv. basecase, a 5 scénářů možné zástavby. Každá simulace obsahuje 2 složky: mapy ve formátu PNG a rastrová GIS data ve formátu ASCII (s projekcí). Všechny hodnoty indexu jsou uvedené v absolutních hodnotách a zprůměrovány do 10-minutových, 1-hodinových, 3-hodinových a denních průměrů.

[The data archive contains the vulnerability index results for the summer simulation of the current state, the so-called baseline, and 5 possible development scenarios. Each simulation contains 2 folders: maps in PNG format and GIS raster data in ASCII format (with geographical projection). All index values are given in absolute values and averaged into 10-min, 1-h, 3-h and daily averages.]

Keywords : PALM * zranitelnost * Evropská * tepelný komfort * znečištění ovzduší * vulnerability * Evropska Street * thermal comfort * air quality

R&D Projects: GA TA ČR(CZ) TN01000024

Institutional support: RVO:67985807

OECD category: Meteorology and atmospheric sciences

DOI: <https://doi.org/10.57680/0567160>

DOI: <https://dx.doi.org/> <https://doi.org/10.57680/0567160>

Handle: <https://hdl.handle.net/11104/0338466>

Depositor: Tereza Šírová

Date of release: 20.1.2023

ASEP publication:

Evropská Street Resiliency

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0567129 - ÚI 2023 cze A - Abstract

[Geletič, Jan](#) - [Lehnert, M.](#)

Měření a mapování tepelného komfortu v Praze-Holešovicích.

[Konzultační setkání o průběžných výsledcích mikroklimatických měření v Praze. Praha, 15.12.2022-15.12.2022]

Method of presentation: Přednáška

Event organizer: Odbor ochrany prostředí MHMP

Institutional support: RVO:67985807

OECD category: Meteorology and atmospheric sciences

Permanent Link: <https://hdl.handle.net/11104/0338394>

0566422 - ÚTIA 2023 CZ eng A - Abstract

[Papáček, Štěpán](#) - [Matonoha, Ctirad](#)

An enhanced model parameter estimation by a slow-fast decomposition based on the first order two time-scale expansion.

Proceedings of the PANM 21 Programy a algoritmy numerické matematiky 21 /2022/. Praha: Institute of Mathematics Czech Academy of Sciences, 2023. s. 19-19.

[PANM 21 Programy a algoritmy numerické matematiky 21 /2022/. 19.06.2022-24.06.2022, Jablonec nad Nisou]

R&D Projects: GA ČR(CZ) GA21-03689S

Institutional support: RVO:67985556 ; RVO:67985807

Keywords : Dynamical systems * Estimated parameters

OECD category: Automation and control systems

<http://library.utia.cas.cz/separaty/2023/TR/papacek-0566422.pdf>

Some dynamical systems, e.g. biochemical networks, are characterized by more than one time scale. On the paradigmatic example of a drug-induced enzyme production we show how the slow-fast decomposition can serve for an enhanced parameter estimation when the slowly changing features are rigorously incorporated.

Permanent Link: <https://hdl.handle.net/11104/0337777>

0566358 - ÚI 2023 eng A - Abstract

[Kůrková, Věra](#)

Some implications of high-dimensional geometry for classification by neural networks.

[SOFSEM 2023: International Conference on Current Trends in Theory and Practice of Computer Science /48./, Nový Smokovec, 15.01.2023-19.01.2023]

Method of presentation: Zvaná přednáška

URL events: <https://ics.science.upjs.sk/sofsem2023/>

Institutional support: RVO:67985807

Permanent Link: <https://hdl.handle.net/11104/0337701>

0566981 - ÚI 2023 CZ eng V - Research Report

[Vlček, Jan](#) - [Lukšan, Ladislav](#)

Some modifications of the limited-memory variable metric optimization methods.

Prague: ICS CAS, 2023. 11 s. Technical Report, V-1290.

Institutional support: RVO:67985807

Keywords : unconstrained minimization * variable metric methods * limited-memory methods * variationally derived methods * arithmetic operations reduction * global convergence

Several modifications of the limited-memory variable metric (or quasi-Newton) line search methods for large scale unconstrained optimization are investigated. First the block version of the symmetric rank-one (SR1) update formula is derived in a similar way as for the block BFGS update in Vlček and Lukšan (Numerical Algorithms 2019). The block SR1 formula is then modified to obtain an update which can reduce the required number of arithmetic operations per iteration. Since it usually violates the corresponding secant conditions, this update is combined with the shifting investigated in Vlček and Lukšan (J. Comput. Appl. Math. 2006). Moreover, a new efficient way how to realize the limited-memory shifted BFGS method is proposed. For a class of methods based on the generalized shifted economy BFGS update, global convergence is established. A numerical comparison with the standard L-BFGS and BNS methods is given.

Permanent Link: <https://hdl.handle.net/11104/0338248>

0566534 - ÚI 2023 CZ eng V - Research Report

[Fabián, Zdeněk](#)

A New Look to Information and Uncertainty of Continuous Distributions.

Prague: ICS CAS, 2022. 17 s. Technical Report, V-1293.

Institutional support: RVO:67985807

Keywords : Differential entropy * information function * uncertainty function * mean information of distribution

We define information and uncertainty function of a family of continuous distributions. Their values are relative information and uncertainty of an observation from the given parametric family, their mean values are the generalized Fisher information and a new measure of variability, the score variance. In a series of examples we show why to use new concepts instead of the differential entropy.

Permanent Link: <https://hdl.handle.net/11104/0337863>

0566535 - ÚI 2023 CZ eng V - Research Report

[Fabián, Zdeněk](#)

Introduction to statistical inference based on scalar-valued scores.

Prague: ICS CAS, 2022. 62 s. Technical Report, V-1294.

Institutional support: RVO:67985807

Keywords : continuous distributions * score mean * score variance * score moment estimation method * score distance

In the report we maintain consistently the following point of view: Given a continuous model, there are not the observed values, which are to be used in probabilistic and statistical considerations, but their "treated forms", the values of the scalar-valued score function corresponding to the model. Based on this modified concept of the score function, we develop theory of score random variables, study their geometry and define their new characteristics, finite even in cases of heavy-tailed models. A generalization for parametric families provides a new approach to parametric point estimation.

Permanent Link: <https://hdl.handle.net/11104/0337864>

0566532 - ÚI 2023 CZ eng V - Research Report

[Fabián, Zdeněk](#)

Scalar-Valued Score Functions and their use in Parametric Estimation.

Prague: ICS CAS, 2022. 21 s. Technical Report, V-1291.

Institutional support: RVO:67985807

Keywords : core random variable * score mean * score variance * score distance * score correlation

In the paper we describe and explain a new direction in probabilistic and statistical reasoning, the approach based on scalar-valued score functions of continuous random variables. We show basic properties of score functions of standard distributions, generalize the approach for parametric families and show how to use them for solutions of problems of parametric statistics.

Permanent Link: <https://hdl.handle.net/11104/0337861>

0566533 - ÚI 2023 CZ eng V - Research Report

[Fabián, Zdeněk](#)

Score correlation for skewed distributions.

Prague: ICS CAS, 2022. 12 s. Technical Report, V-1292.

Institutional support: RVO:67985807

Keywords : Scalar-valued score * score coefficient of variation * Monte Carlo

Based on the new concept of the scalar-valued score function of continuous distributions we introduce the score correlation coefficient "tai-lored" to the assumed probabilistic model and study its properties by means of simulation experiments. It appeared that the new correlation method is useful for enormously skewed distributions.

Permanent Link: <https://hdl.handle.net/11104/0337862>

0566356 - ÚI 2023 eng A - Abstract

[Paluš, Milan](#)

Causality and information transfer in complex systems.

[Information-theoretic Methods for Complexity Science. Vienna, 29.04.2019-01.05.2019]

Method of presentation: Zvaná přednáška

Event organizer: Complexity Science Hub Vienna

Institutional support: RVO:67985807

Permanent Link: <https://hdl.handle.net/11104/0337699>

0566355 - ÚI 2023 eng A - Abstract

[Paluš, Milan](#)

Causality, information, time and transitions.

[International Workshop Predicting Transitions in Complex Systems. Dresden, 23.04.2018-27.04.2018]

Method of presentation: Zvaná přednáška

Event organizer: Max Planck Institute for the Physics of Complex Systems

Institutional support: RVO:67985807

<https://www.pks.mpg.de/de/pretra18/>

Permanent Link: <https://hdl.handle.net/11104/0337698>

0566357 - ÚI 2023 eng A - Abstract

[Paluš, Milan](#)

Information transfer across time scales: Oscillatory modes in complex systems and their interactions.

[Workshop on non-autonomous oscillatory systems and their applications in the life sciences.

Buckinghamshire, 27.11.2018-30.11.2018]

Method of presentation: Zvaná přednáška

<https://www.physicsoflife.org.uk/physics-of-biological-oscillators.html>

Permanent Link: <https://hdl.handle.net/11104/0337700>

0567596 - ÚI 2023 cze A2 - Proceedings Abstract

[Kalina, Jan](#)

Biostatistika: správné rozhodování v medicíně navzdory neurčitosti.

Dialog vědy a víry v Husově sboru v Litomyšli. Litomyšl: Náboženská obec CČSH v Litomyšli, 2017.

[Dialog vědy a víry v Husově sboru v Litomyšli. 22.04.2017-22.04.2017, Litomyšl]

Institutional support: RVO:67985807

Keywords : popularizace vědy * popularisation of science

Permanent Link: <https://hdl.handle.net/11104/0338841>

0567595 - ÚI 2023 cze A2 - Proceedings Abstract

[Kalina, Jan](#)

Gregor Mendel a jeho přínos pro statistiku.

Týden vědy a techniky 2017. Praha: Akademie věd České republiky, 2017.

[Týden vědy a techniky 2017. 06.11.2017-12.11.2017]

Institutional support: RVO:67985807

Keywords : popularizace vědy * popularisation of science * Mendel

Permanent Link: <https://hdl.handle.net/11104/0338835>

0567470 - ÚI 2023 eng A2 - Proceedings Abstract

[Kalina, Jan](#)

Zfalšoval Gregor Mendel výsledky svých pokusů?

Týden vědy a techniky 2016. Praha: Akademie věd České republiky, 2016.

[Týden vědy a techniky 2016. 01.11.2016-13.11.2016]

Institutional support: RVO:67985807

Keywords : popularizace vědy * popularisation of science * Mendel

Permanent Link: <https://hdl.handle.net/11104/0338719>