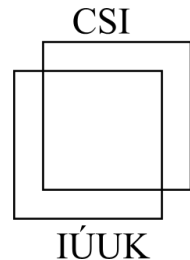


Ročníkové projects

presented by Jan Hubička

Department of Applied Mathematics
(KAM) and

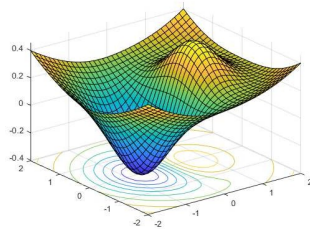
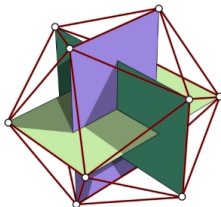
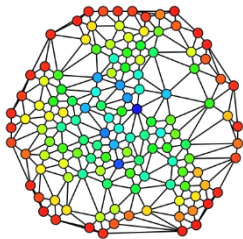
Informatický ústav a status Charlesovy University (ÚUK)



O n'ás

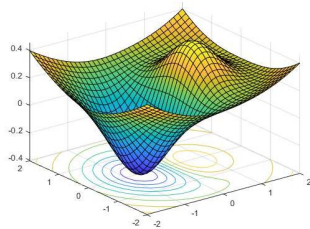
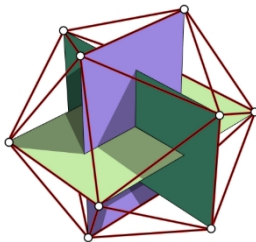
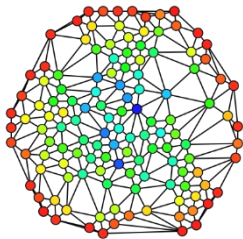
O n'as

- We deal with the mathematics, geometry, theoretical computer science, operational research and optimization.



O nás

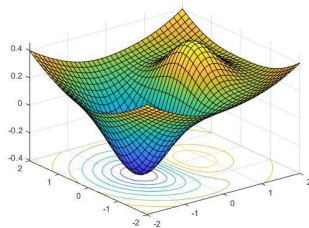
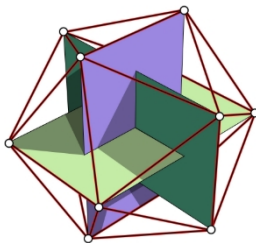
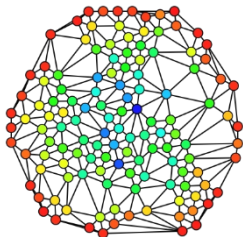
- We deal with mathematics, geometry, theoretical computer science, operational research and optimization.



- Stránky departmentů:
 - WHERE TO: <http://kam.mff.cuni.cz/>
 - ÚUK: <http://iuuk.mff.cuni.cz/>

O nás

- We deal with mathematics, geometry, theoretical computer science, operational research and optimization.



- Stranky departments:
 - WHERE TO: <http://kam.mff.cuni.cz/>
 - ÚUK: <http://iuuk.mff.cuni.cz/>
- We offer yearly intern projects, undergraduate research practice and other activities.

Jamí

~school

Jamí school

- For our students we organize the traditional **Spring School**.



Jamí school

- For our students we organize the traditional **Spring School**.



- Included in 'and' are the lectures, presentations and trips, see

~ <http://kam.mff.cuni.cz/spring/2024>

Research experience for undergraduates (REU)¹

¹This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 823748 (project acronym: CoSP).

Research experience for undergraduates (REU)¹

- We offer the opportunity to participate in the REU program.



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Research experience for undergraduates (REU)¹

- We offer the opportunity to participate in the REU program.



- Each year a selected group of students will travel to the USA for two months to participate in research at Rutgers University.



¹ This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 823748 (project acronym: CoSP).

Úspěchy studentů

Úspěchy studentů

- Our students are very much enjoying the fun of all kinds of competitions



Úspěchy studentů

- Our students are very much enjoying the fun of all kinds of competitions



- Awarded at the **SVOC** competition in recent:
 - 2019: 1st place in category M5-6 (M. Konečný),
 - 2018: 1st place in category M6 (V. B.),
 - 2017: 1st place in category M6 (M. Skotnica),
 - 2016: 1st place in M6 (J. Sosnovec) and M7 (P. Zeman),
 - 2015: 1st place in M3 category (J. Bok),
 - 2014: 1st place in M7 category (P. Veselý),
 - 2012: 1st place in the category M6 (P. Klavík) and M7 (M. Balko),
 - 2011: 1st place in M6 category (M. Balko),
 - 2010: 1st place in category M6 (Z. Safernová).

Úspěchy studentů

Úspěchy studentů

- Our students from risk avají and the Dean's Prizes (T. Čížek, M. Černý, 2022, M. Konečný, 2018), the Rector's Prize (M. Poljak, 2020) and the Josef Hlávka Prize (M. Konečný, 2023).

Úspěchy studentů

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- The students of KAM (M. Schmid and M. Moravřřřk) participated in the firstř development of theř, which and helped to beat man in poker.

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Novinky.cz

Novinky.cz • Internet a PC • Češi vytvořili umělou inteligenci, která drtí v ... Podružky: Hardware • Software • Testy • Hry a herní systémy • Mobil

Češi vytvořili umělou inteligenci, která drtí v pokeru jednoho hráče za druhým

3. 3. 2017, 15:44 • ml Novinky

f Facebook t Twitter

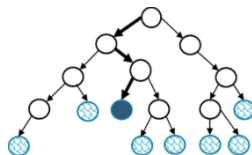
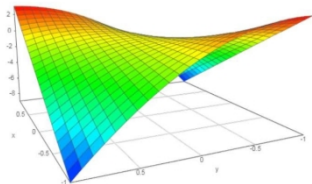
Vědci z Matematicko-fyzikální fakulty Univerzity Karlovy a Fakulty elektrotechnické ČVUT v Praze pracovali několik posledních měsíců na vývoji umělé inteligence, jejímž hlavním úkolem bude stát se špičkou v karetní hře Poker Texas Hold'em. A to se skutečně podařilo, program porazil hned několik profesionálních hráčů.



Head of 'i and their projects (KAM)

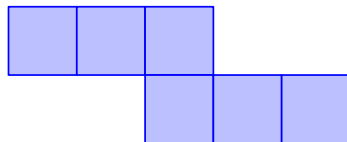
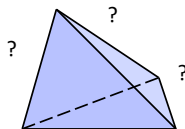
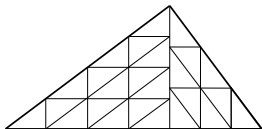
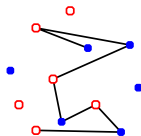


- The box image at the line ∞ and square display
 - This picture is easy to estimate by evaluating the interval arithmetic, but in the result m can be greatly overestimated. The aim of this analysis is to improve these estimates.
- Tests of copositivity using branch & bound
 - A matrix A is copositive if $x^T A x$ is not ≤ 0 and not ≥ 0 for all vectors x other than ≤ 0 and not ≥ 0 . In general, it is NP-hard to check whether a given $n \times n$ matrix is copositive. The purpose of the ∞ would be to implement the method branch & bound on the tests of ∞ copositivity matrix.
- Many other projects and works can be found on the personal pages of ∞ .



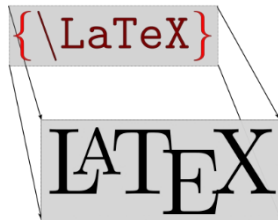
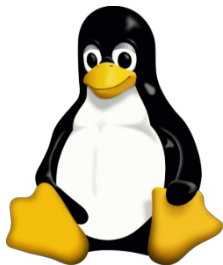
Discrete geometry, graph drawing, combinatorics.

- topics are focused on **and theoretical**; the project would be followed by theoretical and undergraduate and theoretical.



- Specifically these topics available at and on each.

- Graph algorithms and data structures
- Správa Linux and computers
- Text typesetting (TeX, ePUB)
- Drawing of maps and maps with geodata
- Nástroje software development tools



Head of the year's projects:

Elif Garajová

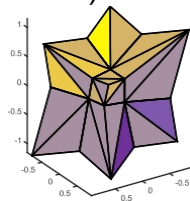
Milan Hladík

David Hartman



The group of interval methods offers annual projects in the field of interval analysis, linear algebra and optimization with imprecise (interval) data.

$$\begin{array}{ccc} 5 & [1, 2] & 1 \\ [1, 2] & 5 & [0, 2] \\ [1, 4] & [0, 2] & 5 \end{array} \begin{array}{c} \text{!} \\ \\ \end{array} = \begin{array}{c} [-2, 2] \\ [-2, 2] \\ [-2, 2] \end{array} \begin{array}{c} \text{!} \\ \\ \end{array}$$



Náměty na intervalové projekty

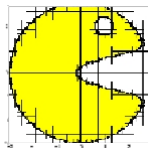
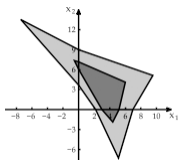
Intervalové matrice a jejich vlastnosti

- Regularity, inypočet of customčísles, specialáhí třímatices, ... Intervalové systémy lineárních rovnic

- Metody pro řešení intervalových systémů, lineárních systémů s parametrickými závislostmi koeficientů, ...

Intervaly a optimalizace a teorie her

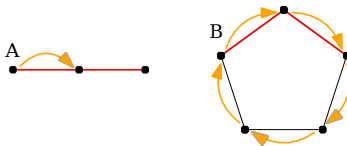
- Řešení optimalizačních problémů s intervalovými daty, vizualizace množiny optimálních řešení, ...



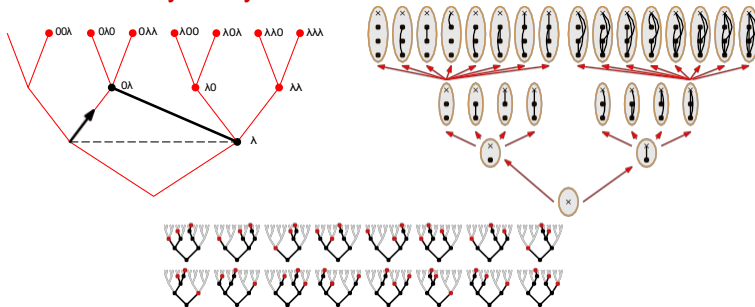
→ <https://kam.mff.cuni.cz/gim/>

Group on
Interval
Methods

- Study of symmetries of structures



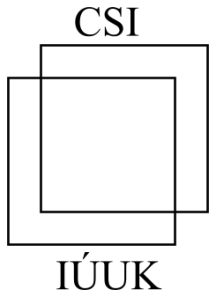
- Structure and Ramsey theory



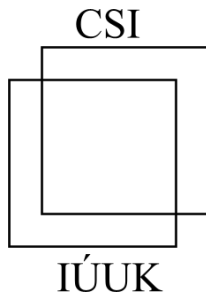
Head of 'i and their projects (IUUK)



- It is also possible to find projects on the .
- If you choose a project from the KAM Ú UK, please contact the project leader by at .
- Contacts can be found on each departments:
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 - Ú UK: <http://iuuk.mff.cuni.cz/>



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Thank you for your attention.