NEWSLETTER

National Competence Centre Bulgaria

THE NEW SUPERCOMPUTER HEMUS

In October 2023, the new petascale supercomputer HEMUS came into operation at IICT-BAS. The HEMUS supercomputer has a peak (theoretical) performance of over 3 PetaFlops, 148 servers (distributed in two subsystems) and non-blocking InfiniBand connectivity. The system was ranked 360th in the November Top500 list of the most powerful supercomputers, after achieving a LINPACK performance of 2.53 PetaFlops on the standard High Performance Linpack (HPL) benchmark.

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HPC USER FORUM BULGARIA, 16 NOVEMBER 2023

The annual HPC user forum in Bulgaria took place in Sofia Tech Park on November 16th, 2023. In the past three years, the Forum was organised by the National Competence Centre for High Performance Computing in Bulgaria (NCC Bulgaria), established within the framework of project EuroCC – "National Competence Centres in the framework of EuroHPC", Phase 1 and 2.

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SUCCESS STORIES

National Competence Centre Bulgaria

ANALYZING EFFICIENCY OF AD CHANNELS FROM MULTIPLE PLATFORMS

In the evolving digital advertising landscape, brands and marketers invest across multiple platforms like Facebook, Instagram, Google Ads, LinkedIn and more. Each of these platforms provides a plethora of data related to ad performance, audience engagement, and conversion metrics. However, integrating and comparing data from these disparate sources with their own specific APIs to derive a holistic view of advertising efficiency remains a significant challenge.

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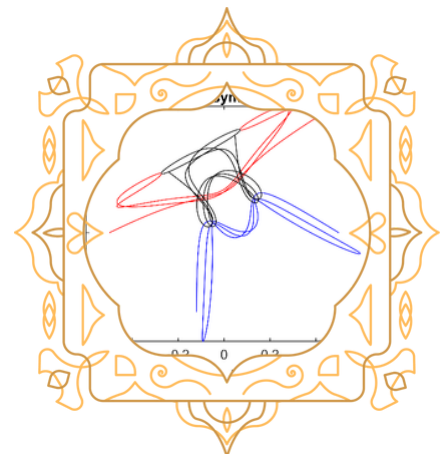### HPDA SERVICE FOR ESTIMATING THE BROWN BEAR POPULATION IN BULGARIA

The problems were related to the reliability of the provided data from the national monitoring, the approaches to determine the unique traces, and the application of the statistical algorithms. We encountered challenges when we integrated the sample areas (quadrats-10x10km) using ETRS89 and bear habitats in different forest types, through the CORINE Land Cover-2018 product. Other technical issues arose when we plugged into the HPDA service the GPS coordinates for the found bear's footprints during the National monitoring.

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MORE THAN 12,000 NEW PERIODIC FREE-FALL ORBITS FOR THE THREE-BODY PROBLEM

In 2019 Li and Liao announced the discovery of 313 initial conditions (i.c.s) for free-fall (or "brake") collisionless periodic orbits in the Newtonian three-body problem, 30 of these 313 i.c.s being for equal-mass case. They used TH-2 at the National Supercomputer Centre in Guangzhou, China to achieve these results. Although it was a breakthrough in searching for new periodic free-fall orbits at the time, this number of discovered and identified free-fall orbits does not compare favorably with thousands of other types of periodic 3-body orbits that have been found over the past decade.

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THE POWER OF HPC FOR BETTER LIFE!

Events from NCC Bulgaria

- **"Train-the-trainers" event** at IICT, 14 September 2023.
- **Collaboration meeting NCC Bulgaria – NCC Serbia,** 26 September 2023.
- **Presenting the EuroCC2 project at the Night of Scientists,** 30 September 2023.
- **Introductory Training for Industrial Users,** 12 October 2023.
- **Presenting the EuroCC2 project at the "European Entrepreneurship Day",** 8 November 2023.
- **HPC Forum Bulgaria,** 16 November 2023.

Events from the others NCCs

- Basic Quantum Computing Algorithms and their Implementation in Cirq, NCC Czech Republic, 5-6 September 2023, online.
- Introduction to oneAPI, SYCL2020 and OpenMP offloading, NCC Germany, 13-15 September 2023, online.
- Julia for High-Performance Scientific Computing, NCC Sweden, 10-13 October 2023, online.
- EuroCC2 Central Europe Regional Workshop, Kraków/Polan, NCC Poland, 6 December 2023, on site.

TRAINING

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