

Humboldt Kolleg

**"Human and artificial intelligence in science
and society"**

12-15 September 2024

Sofia, Bulgaria

Grand Hotel Millennium

Preliminary Program

12.09.2024
15.00 - 17.00 REGISTRATION In front of hall Newton, 3 rd floor
17.00 - 18.15 OPENING Hall Newton Chair: Georgi Vayssilov
<ul style="list-style-type: none"> • President of the Humboldt Union in Bulgaria • President of the Alexander von Humboldt Foundation • German officials • Bulgarian officials
18.15 – 18.45 Plenary lecture
Ilza Pajeva, Troyo Troev (Bulgaria) <i>Bulgarian Academy of Sciences</i> <i>Humboldt Union in Bulgaria: past, present and future</i>
19.30 - 22.00 Reception

13.09.2024	
09.00 - 10.30 SESSION Hall Newton:	
Chair: Violeta Velikova	
09:00 – 09:45 Robert Schlögl – <i>President of the Alexander von Humboldt Foundation</i> <i>Ammonia Synthesis – the never ending story</i>	
09:45 – 10:30	
10:30 – 10:50 Coffee break	
10:30 – 12:30: Hall Newton	10:30 – 12:30: Hall Columb 1
PARALLEL SESSION: Artificial intelligence in science and education	PARALLEL SESSION: Humanities
Chair: Nikolay K. Vitanov	Chair: Valery Stojanov
10:50 – 11:10 Petar Kenderov (Bulgaria) <i>The High School Institute of the Bulgarian Academy of Sciences and the Artificial Intelligence</i>	10:50 – 11:10 Alexander Kartosia (Georgia) <i>Wer hat das geschrieben? Zur literarischen Bearbeitung des Theorems der zufälligen Entstehung sinnvoller Texte</i>
11:10 – 11:30 Dilyana Boteva, Ivajla Popova, Julia Tzvetkova, Desislava Vladimirova, Lily Grozdanova (Bulgaria) <i>Digital Humanities, AI, and Higher Education</i>	11:10 – 11:30 Maria Endreva (Bulgaria) <i>Das Konzept von der Singularität (Ray Kurzweil) und seine Auswirkung auf die Reorganisation der menschlichen Arbeit in Werken der deutschsprachigen Gegenwartsliteratur</i>
11:30 – 11:50 Daniel Danchev, Gergana Nikolova (Bulgaria)	

<p><i>On the Increasing Role of AI in the Biomechanics of Humans</i></p> <p>11:50 – 12:10 Khristo Tarnev (Bulgaria) <i>Elements of AI in commercial products for physics simulations</i></p> <p>12:10 – 12:30 </p> <p>12:30 – 12:50 Magdalena Parcheva (Bulgaria) <i>Artificial Intelligence and Workplace Innovations</i></p>	<p>11:30 – 11:50 Nikolina Burneva (Bulgaria) <i>Die deutsche Romantik und ihre Sicht auf den Maschinenmenschen: E. Th. A. Hoffmann</i></p> <p>11:50 – 12:10 Ewa Wojno-Owczarska (Poland) <i>Gefahren der Entwicklung künstlicher Intelligenz am Beispiel von Michael Stauffers Hörspiel "Das großartige Mimei" (2023) und Spike Jonzes Film "Her" (2016)</i></p> <p>12:10 – 12:25 Dariya Manova, junior researcher (Austria) <i>Wellen – Strahlen – Signale. Drahtlose Vernetzung in der Literatur der Moderne</i></p> <p>12:25 – 12:40</p>
<p>12:50 – 14:00 Lunch</p>	
<p>14:00 – 16:00: Hall Newton PARALLEL SESSION: Artificial intelligence in science and education</p>	<p>14:00 – 16:00: Hall Columb 1 PARALLEL SESSION: Humanities</p>
<p>Chair: Albena Paskaleva</p> <p>14:00 – 14:20 Nikolay K. Vitanov (Bulgaria) <i>Mathematical social dynamics and Artificial Intelligence</i></p> <p>14:20 – 14:40 Liudmil Antonov (Bulgaria) <i>Small, smaller, molecule – Human and artificial intelligence in the design of molecular machinery</i></p> <p>14:40 – 14:55 Mariya Yavahchova, Ventzislav Rusanov (Bulgaria) <i>Artificial intelligence in experimental nuclear physics</i></p> <p>14:55 – 15:10 Krasimir Georgiev, junior researcher (Bulgaria) <i>Machine learning and Artificial Intelligence in the applications of the environmental fluid mechanics</i></p> <p>15:10 – 15:25 Kaloyan Vitanov, junior researcher (Bulgaria)</p>	<p>Chair: Nikolina Burneva</p> <p>14:00 – 14:20 Thomas Daiber (Germany) <i>The text as a communicative unit. Consequences for applications of AI</i></p> <p>14:20 – 14:40 Ruxandra Cosma, Marc Kupietz (Romania, Germany) <i>Sprachvergleich, Korpustechnologie und Künstliche Intelligenz</i></p> <p>14:40 – 15:00 Mariya Chankowa, junior researcher, Irena Vassileva (Bulgaria) <i>ChatGPT and implications for authorship: the (in)possible creator</i></p> <p>15:00 – 15:20 Simeon Ganev, junior researcher (Bulgaria) <i>Wenn Maschinen sehen und hören lernen: Zur audiovisuellen Transformation</i></p> <p>15:20 – 15:40 </p> <p>15:40 – 16:00</p>

<p><i>Motion of researchers between research organizations: Can AI help to direct the process?</i></p> <p>15:25 – 15:40 Ivan Yanakiev, <i>junior researcher</i> (Bulgaria) <i>Artificial Intelligence and composition of music</i></p>	<p>.....</p>
<p>16:00 – 16:20 Coffee break</p>	
<p>16:20 – 18:00: Hall Newton PARALLEL SESSION: Natural and Mathematical Sciences</p>	<p>16:20 – 18:00: Hall Columb 1 PARALLEL SESSION: Humanities</p>
<p>Chair: Petar Petrov</p> <p>16:20 – 16:40 Albena Paskaleva (Bulgaria) <i>Materials and structures for neuromorphic computing</i></p> <p>16:40 – 17:00 Valerije Vrcek (Croatia) <i>Chemical fate of pharmaceuticals in the environment: NMR and Quantum-chemical study</i></p> <p>17:00 – 17:20 Lyubomir Stoyanov, Nikolay Dimitrov, Gerhard G. Paulus, Alexander Dreischuh (Bulgaria) <i>Beam shaping of few-cycle laser pulses</i></p> <p>17:20 – 17:35 Georgi Simeonov, <i>junior researcher</i>, Ognyan Kounchev (Bulgaria) <i>On polyspline Kolmogorov-Arnold Networks and their application to solution of Elliptic boundary value problems</i></p> <p>17:35 – 17:50 Kristina Simeonova, <i>junior researcher</i> (Bulgaria) <i>Quantum chemical investigation of the reaction path of coumarin derivatives</i></p>	<p>Chair: Lora Taseva</p> <p>16:20 – 16:40 Dobriela Kotova (Bulgaria) <i>Eine intellektuelle Heldentat des 9. Jahrhunderts: Konstantin von Preslav und sein Lehrevangelium</i></p> <p>16:40 – 17:00 Achim Rabus (Germany) <i>From Parchment to Programming: AI's Adventures in Language Analysis</i></p> <p>17:00 – 17:20 Ivan Petrov (Bulgaria) <i>Digitalinstrumente und Altslawistik: methodologische Bemerkungen</i></p> <p>17:20 – 17:35 Ivan Iliev (Bulgaria) <i>Medieval Texts and Artefacts beyond the Canon</i></p> <p>17:35 – 17:50 Fabio Maion, <i>junior researcher</i> (Austria) <i>Using artificial intelligence to study intellectual works of the Middle Ages. The example of the Middle Bulgarian Dioptra translation</i></p>
<p>19:00 – 22:00 Dinner</p>	

<p>14.09.2024</p>	
<p>09:00 – 10:40: Hall Columb 1 PARALLEL SESSION: Medical and Life Sciences</p>	<p>09:00 – 10:40: Hall Columb 2 PARALLEL SESSION: Chemical Sciences</p>
<p>Chair: Ilza Pajeva</p>	<p>Chair: Liudmil Antonov</p>

<p>09:00 – 09:20 Radka Argirova, Trifon Valkov, George Dimitrov, junior researcher (Bulgaria) <i>Widely neutralizing antibodies to conserved virion structures of HIV – a new perspective for vaccines targeting viruses with high mutation rate</i></p> <p>09:20 – 09:35 Trifon Valkov, junior researcher, George Dimitrov, junior researcher, Radka Argirova (Bulgaria) <i>Assessment of COVID-19 Vaccine Effectiveness in a nation with a low vaccination coverage: Insights FROM Real-World Data and Propensity Score Matched Analyses</i></p> <p>09:35 – 09:50 Maria Sakelarieva, Yozlem Kobakova, Petar Atanasov, Spiro Konstantinov (Bulgaria) <i>COVID19 and lymphoma with skin localization</i></p> <p>10:00 – 10:20 Yozlem Kobakova, Maria Sakelarieva, Petar Atanasov, Spiro Konstantinov (Bulgaria) <i>COVID-19 AND CLL (chronic lymphocytic leukemia)</i></p> <p>10:05 – 10:20 Ivan Bogdanov, junior researcher <i>From in silico to in vitro evaluation of novel Factor XIIIa inhibitors</i></p> <p>10:20 – 10:35 Elina Beleva (junior researcher), Ilza Pajeva (Bulgaria) <i>Computational study to predict P-glycoprotein binding potential of tyrosine kinase inhibitors for cancer treatment</i></p>	<p>09:00 – 09:15 Mina Todorova, junior researcher (Bulgaria) <i>Spectral and structural elucidation of a new stilbazolium dye</i></p> <p>09:15 – 09:30 Nikoleta Kircheva, junior researcher (Bulgaria) <i>Abiogenic metal cations in medicine: Computational insights into the mechanism of their therapeutic action</i></p> <p>09:30 – 09:45 Iliyana Peltekova, junior researcher (Bulgaria) <i>Experimental study of some thermodynamic characteristics of two- and three-component aqueous solutions of strong electrolytes as functions of their concentration</i></p> <p>09:45 – 10:00 Ekaterina Koleva, Kalina Koleva, junior researcher (Bulgaria) <i>Enzymatic browning or why fruits and vegetables loss their quality after damaging of cell integrity</i></p> <p>10:00 – 10:15</p> <p>10:15 – 10:30</p>
10:40 – 11:00 Coffee break	
11:00 – 13:00: Hall Columb 1 PARALLEL SESSION: Medical Science	11:00 – 13:00: Hall Columb 2 PARALLEL SESSION: Biological Sciences
<p>Chair: Radka Argirova</p> <p>11:00 – 11:20 Nikolai Lazarov (Bulgaria) <i>The carotid body: A polymodal arterial chemoreceptor</i></p> <p>11:20 – 11:40</p>	<p>Chair: Spiro Konstantinov</p> <p>11:00 – 11:20 James Olopade (Nigeria) <i>Prevalence and Tissue Colocalization of Neurotrophic Viruses in Natural and Potential Reservoir Hosts in Nigeria</i></p>

<p>Petja Vassileva, Yordanka Kirilova, junior researcher (Bulgaria) <i>Potential role of ai in diagnosis of low tension glaucoma</i></p> <p>11:40 – 12:00 Radka Kaneva (Bulgaria) <i>Influence of the host genome on COVID-19 susceptibility and severity of disease in Bulgarian patients</i></p> <p>12:00 – 12:15 Darina Kachakova, junior researcher, Kalina Mihova, Rumyana Dodova, Veronika Petkova, Radka Kaneva (Bulgaria) <i>Germline genetic analysis of patients with oncological diseases</i></p> <p>12:15 – 12:30 Anita Kavrakova, junior researcher, E. Todorova, B. Georgieva, F. Odzhakov, S. Bachurska, M-E. Boyadzhieva, V. Mitev, A. Todorova (Bulgaria) <i>Role of Herpesviridae family in prostate cancer onset, immunocompromised status and progression in the tumor environment</i></p>	<p>11:20 – 11:40 Maya Zaharieva, Pelagia Foka, Dimitrina Zheleva-Dimitrova, Stanislav Philipov, Eirini Karamichali, Tanya Chan Kim, Yana Ilieva, Mila Kaleva, Anna Bratchlova, Vessela Balabanova-Bozushka, Reneta Gevrenova, Alexander Kroumov, Urania Georgopoulou, Hristo Najdenski (Bulgaria, Greece) <i>Antiviral activity of photosensitizers and microalgae extracts against bovine coronavirus</i></p> <p>11:40 – 11:55 Martina Peeva, junior researcher (Bulgaria) <i>Cytotoxic and antiproliferative effects of new potential antibacterial agents</i></p> <p>11:55 – 12:10 Yana Ilieva, junior researcher (Bulgaria) <i>Bacterial isolates from bats - potential sources of antimicrobial resistance?</i></p> <p>12:10 – 12:25 Mila Kaleva (Bulgaria) <i>The Stephan Angeloff Institute of Microbiology, Bulgarian Academy of Sciences, Sofia</i></p>
12:40 – 14:00 Lunch	
14:00 – 15:30 - Round Table: Perspectives and future of artificial intelligence and its interaction with the society	
16:00 – 19:00 - SOCIAL PROGRAMME: Guided tour in Sofia	
19:30 – 22:30 Dinner	

15.09.2024	
09:00 – 10:40: Hall Newton PARALLEL SESSION: Biological Sciences	09:00 – 10:40: Hall Columb 1 PARALLEL SESSION: Chemical Sciences
<p>Chair: Maya Zaharieva</p> <p>09:00 – 09:20 Aleksandar Ateamin, Aneliya Ivanova, Rumen Stamatov, Sonya Dimitrova-Uzunova, junior researcher, Stoyno Stoynov, (Bulgaria) <i>Kinetics of SARS-CoV-2 entry into cells</i></p> <p>09:20 – 09:35 Radoslav Aleksandrov, junior researcher (Bulgaria) <i>Exploring the impact of anticancer drugs onto the dynamics of DNA repair proteins</i></p>	<p>Chair: Liudmil Antonov</p> <p>09:00 – 09:20 Tsonko Kolev (Bulgaria) <i>New structural motifs of squaric acid derivatives of amino acids, amino acid amides and diamides</i></p> <p>09:30 – 09:45 Lidia Zaharieva, junior researcher (Bulgaria) <i>Investigating the influence of the external electric field on the tautomerism in 7-hydroxyquinoline derivatives</i></p>

<p>09:35 – 09:50 Rumen Stamatov, <i>junior researcher</i> (Bulgaria) <i>Computational algorithms for chromosome tracking in living cells</i></p> <p>09:50 – 10:05 Sonya Uzunova, Rumen Stamatov, <i>junior researcher</i>, Stoyno Stoynov (Bulgaria) <i>Studying DNA-protein crosslink (DPC) repair protein kinetics via live-cell microscopy and machine learning approaches</i></p> <p>10:05 – 10:20 Sylvia Varhoshkova, <i>junior researcher</i>, Stoyno Stoynov (Bulgaria) <i>Dark holes at the microscopic level</i></p> <p>10:20 – 10:35</p>	<p>09:45 – 10:00 Marianna Vasilaki, <i>junior researcher</i> (Bulgaria) <i>Quantitative assessment of the intermolecular interactions between folate-based vectors and the folate receptor-α</i></p> <p>10:00 – 10:15 Iskra Z. Koleva, <i>junior researcher</i> <i>Encapsulation of eugenol by spray drying using Soluplus[®] and Lutrol[®] as solid carriers</i></p> <p>10:15 – 10:30 </p> <p>10:30 – 10:45 </p>
10:40 – 12:00 Closing session Hall Newton	
<p>Chair: Maria Endreva</p> <p>10:40 – 11:10 Krum Bacvarov - <i>Ambassador-scientist of the Foundation</i> <i>Presentation of the programs of the Alexander von Humboldt Foundation</i></p> <p>11:10 – 11:30 Questions and Answers</p> <p>11:30 – 12:00 Closing remarks and certificates</p>	