# Book of Abstracts

## The Third Serbian International Conference on Applied Artificial Intelligence (SICAAI)

May 23-24, 2024, Kragujevac, Serbia

**The Third Serbian International Conference on Applied Artificial Intelligence, Kragujevac – Book of Abstracts**

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# WELCOME MESSAGE

Dear colleagues and students,

On behalf of the Organizing Committee, it is a pleasure to welcome you at the Third Serbian International Conference on Applied Artificial Intelligence AAI2024 which takes place in Kragujevac, Serbia, on May 23rd-24th, 2024 at the University of Kragujevac.

AAI2024 provides an exceptional Serbian and international forum to share the state-of-the-art research knowledge and results on the innovative theories, methodology and applications of artificial intelligence and its sub-domain like deep learning, machine learning in different areas such as medicine, economy, education, law, smart city, government, industry etc. Moreover, the conference aims to provide a platform for researchers and practitioners for both academia and industry to share the information about cutting-edge developments in the field of artificial intelligence.

It also aims to:

- provide early-stage researchers with an inspiring event allowing them to connect to relevant experts in related fields;
- provide an exciting venue for researchers to network and establish national and international collaborations;
- bring together leading experts from all relevant scientific domains to enhance the understanding of *Artificial Intelligence*;

Topics cover the following:

**AI IN DOMAIN-SPECIFIC APPLICATIONS**

- AI in Computational Biology, Medicine and Biomedical Applications
- AI in WWW, Communication, Social Networking, Recommender Systems, Games and E-Commerce
- AI in Finance and Risk Management

**AI IN DATA ANALYTICS AND BIG DATA**

- Visual Analytics for Big Data
- Computational Modeling for Big Data
- Large-scale Recommendation and Social Media Systems
- Cloud/Grid/Stream Data Mining for Big Velocity Data
- Semantic-based Big Data Mining

**MACHINE LEARNING AND DATA MINING**

- Pre-processing, Dimension Reduction and Feature Selection Computing, Bayesian and Neural Networks
- Learning Graphical Models and Complex Networks
- Active, Cost-Sensitive, Semi-Supervised, Multi-Instance, Multi-Label and Multi-Task Learning
- Transfer/Adaptive, Rational and Structured Learning

There are seven different mini-symposiums:

- **MS1: AI in Energy and Environmental Science**
  Organizers: **Boban Stojanović**, Faculty of Science, University of Kragujevac, Kragujevac, Serbia; **Nikola Milivojević**, Water Institute Jaroslav Cerni, Belgrade, Serbia; **Milan Stojković**, The Institute for Artificial Intelligence R&D of Serbia, Novi Sad, Serbia.
- **MS2: AI & IOT for Smart Industry**
  Organizers: **Milovan Medojević**, The Institute for Artificial Intelligence R&D of Serbia, EnergyPulse DOO, Novi Sad, Serbia.
- **MS3: AI in Computer Vision and Remote Sensing**
  Organizers: **Marko Pavlović**, The Institute for Artificial Intelligence R&D of Serbia, Novi Sad, Serbia; **Slobodan Ilić**, The Institute for Artificial Intelligence R&D of Serbia, Novi Sad, Serbia; **Dubravko Ćulibrk**, The Institute for Artificial Intelligence R&D of Serbia, Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia.
- **MS4: AI and Social Wellbeing**
  Organizers: **Ljubiša Bojić**, The Institute for Artificial Intelligence R&D of Serbia, Novi Sad, Serbia; **Milan Čabarkapa**, Faculty of Engineering, University of Kragujevac, Serbia; **Igor Pantić**, Faculty of Medicine, University of Belgrade, Serbia.
- **MS5: Future of Workforce**
  Organizers: **Jelena Ćulibrk**, The Institute for Artificial Intelligence R&D of Serbia, Novi Sad, Serbia; **Bojana Jokanović**, The Faculty of Technical Sciences, University of Novi Sad, Serbia; **Dunja Bošković**, The Faculty of Technical Sciences, University of Novi Sad, Serbia.
- **MS6: Delivering on The Promise of AI to Improve Health Outcomes**
  Organizers: **Tijana Geroski**, Faculty of Engineering, University of Kragujevac, Serbia; **Nenad Filipović**, Faculty of Engineering, University of Kragujevac, Serbia.
- **MS7: Heritage Mining: Theory and Examples**
  Organizers: **Veljko Milutinović**, Guest Lecturer and Former Faculty, Purdue University, USA Adjunct Professor, University of Indiana in Bloomington, USA, Adjunct Professor, Technical University of Graz, Austria Visiting Professor, University of Kragujevac Visiting Professor, University of Belgrade Visiting Professor, University of Montenegro.

As well as seven world renowned plenary speakers in the area of applied artificial intelligence:

- **Prof. Amir A. Amini** – University of Louisville, Louisville, Kentucky, USA; **Title: 4D Flow MRI: Efficient Acquisition and Deep Learning Strategies for Assessment of Hemodynamics**
- **Prof. Borko Furht** – Florida Atlantic University, Boca Raton, Florida, USA; **Title: Successful Engineering Education Requires Applied Industry Projects**
- **Prof. Themis Exarchos** – Ionian University, Corfu, Greece; **Title: Using Explainable AI (xAI) to Predict the Conversion from Mild Cognitive Impairment to Alzheimer's Disease**
- **Prof. Emil Jovanov** – University of Alabama at Huntsville, USA; **Title: Integrating AI and IoT for Personalized Healthcare**
- **Prof. Dubravko Ćulibrk** – University of Novi Sad, Novi Sad, Serbia; **Title: AI-disrupted Medicine and How to Apply it in Serbia**
- **Prof. Israel Koren** – University of Massachusetts in Amherst, USA; **Title: Protecting Vehicle Privacy against AI-Enhanced Attackers in Intelligent Transportation Systems**
- **Prof. Zoran Obradović** – Temple University, Philadelphia, Pennsylvania, USA; **Title: Characterizing Disruptive Events by Modeling Dynamics in Multiplex Networks**

We have received more than 180 high-quality research papers. As a result of the strict review process and evaluation, the committee selected over 100 papers as extended abstracts.

After the review, full papers from the AAI2024 conference will be published by Springer Verlag in the series “Learning and Analytics in Intelligent Systems” under the title “Applied Artificial Intelligence”.
We must also admit that the conference certainly would not have been so successful without the efforts of many people who were actively engaged in organization of such a major academic event. We express gratitude to the members of the program and scientific review committee as well as to all the chairs, organizers and committee members for their dedication and support.
On behalf of the Organizing Committee, we wish you all a pleasant stay in Kragujevac and a productive conference.

***Prof. Nenad Filipović***, Conference Program Chair

# ORGANIZING COMMITTEE

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- Stefan Badža (Serbian Government, Serbia)

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- **Miloš Đuran,** Serbian Academy of Sciences and Arts
- **Vesna Ranković,** University of Kragujevac
- **Vladimir Ranković,** University of Kragujevac

# Technical Program

## Thursday 23 May 2024

| | |
|---|---|
| 09:00 - 09:30 | Opening Ceremony - Day I:<br>**Jelena Begović,** Minister of Science, Technological Development and Innovation, Republic of Serbia<br>**Nikola Dašić**, Mayor of the City of Kragujevac<br>**Prof. Nenad Filipović**, Rector of the University of Kragujevac |

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|---|---|
| 09:30 - 10:30 | Keynote speakers:<br>**4D Flow MRI: Efficient Acquisition and Deep Learning Strategies for Assessment of Hemodynamics**<br>**Prof. Amir A. Amini**<br>**Successful Engineering Education Requires Applied Industry Projects**<br>**Prof. Borko Furht**<br>Chair: Nenad Filipović |

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|---|---|
| 10:30 - 11:00 | Coffee Break |

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| 11:00 - 12:00 | Keynote speakers:<br>**Protecting Vehicle Privacy against AI-Enhanced Attackers in Intelligent Transportation Systems**<br>**Prof. Israel Koren**<br>**Characterizing Disruptive Events by Modeling Dynamics in Multiplex Networks**<br>**Prof. Zoran Obradović**<br>Chair: Veljko Milutinović |

**Session T.1A 12:00-14:00**
**Mini-Symposium I – AI in Energy and Environmental Science**
Chair: Boban Stojanović

**T.1A.1 Deep neural network models for dynamic resilience estimation of a complex water system under hazards -** Vukašin Ćirović, Milan Stojković, Vladimir Milivojević

**T.1A.2 Temperature as a factor shaping dissolved oxygen in the Danube river -** Irena Todorović, Branislav Kisačanin, Milan Stojković

**T.1A.3 Recurrent Neural Networks for Energy Management Systems: A Case Study -** Jelena Joksimović, Jure Kos, Krištof Debeljak, Janez Povh

**T.1A.4 Evaluating Bayesian Approaches for Water Quality Classification: A Comparative Study -** Ana Dodig, Tatjana Lutovac

**T.1A.5 Exploring machine learning approaches for predicting the resilience of water resources system under hazardous events -** Aleksandra Z. Kazaković, Višnja M. Simić and Vukašin B.

Ćirović

**T.1A.6 Application of artificial intelligence in approximating 2D hydraulic calculations** - Boško Laković, Dušan Stefanović, Uroš Stanković, Luka Stojadinović, Boban Stojanović

**T.1A.7 A comparative study of automl libraries and hyperparameter tuning techniques** - Radovan Drašković, Marija Jolović, Miloš Ivanović, Boban Stojanović

**T.1A.8 Treatment of non-physical Solutions of the Oxygen Diffusion in Soil by Physics-Informed Neural Network** - Miloš Ivanović, Ljubica Kuzmanović, Andreja Živić, Milan Kovačević, Svetislav Savović

**Session T.1B 12:00-14:00**
**Mini-Symposium III – AI in Computer Vision and Remote Sensing**
Chair: Marko Pavlović

**T.1B.1 Efficient sequential detection: enhancing cancer detection in sequential MRI sequences** - Aleksandar Cvetković, Veljko Papić

**T.1B.2 Improving velocity estimation in GPR recordings using machine learning approach** - Daniel Štifanić, Jelena Štifanić, Sandi Baressi Šegota, Nikola Anđelić and Zlatan Car

**T.1B.3 Evaluating GDPR and HIPAA in the integration of ML/AI for future-proofing healthcare** - Saso Nikolovski, Anita Petreska

**T.1B.4 Application of remote sensing indices in vegetation monitoring** - Marko Pavlović, Karlo Bala

**T.1B.5 Multi-class birads categorization of mammographs using neural networks** - Vanja Švenda, Nikola Jovišić, Milica Škipina, Slobodan Ilić

**T.1B.6 AI-Driven Soil Property Estimation** - Karlo Bala, Marko Pavlović

**T.1B.7 The impact of artificial intelligence on digital marketing** - Ana Spasojević, Stefan Zdravković, Aleksandar Milovanović

**T.1B.8 Human right to artificial intelligence: an alternative regulatory framework** - Dragan Dakić

**Workshop C 12:00-18:00**
**Artificial Intelligence for Improved Diagnosis of Heart Failure – The INTELHEART Project**
Chair: Smiljana Tomašević

- The aim and vision of INTELHEART project
- The INTELHEART clinical study and data usage following FAIR principles
- The latest advancements in AI-driven diagnosis of heart failure
- Introducing the concept of INTELHEART platform and integration of machine learning, computational modeling, and vocal biomarkers
- Utilization of voice characteristics to assess emotional disturbance and psychological resilience in cardiovascular diseases
- Networking with leading experts, clinicians, researchers, and stakeholders in the field

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|---|---|
| 14:00 - 15:00 | Buffet Lunch |

**Session T.2A 15:00-17:00**
**Mini-Symposium II –AI & IoT for Smart Industry and Big Data**
Chair: **Milovan Medojević**

**T.2A.1 The future of Manufacturing: Generative AI and Beyond** - Aleksandar Rikalović, Bojana Bajić, Miloš Jovičić, Milovan Medojević

**T.2A.2 Symbolic AI in verifiable design of financial exchanges** - Dragisa Žunić, Milovan Medojević, Miloš Jovičić

**T.2A.3 Evaluation of using balanced and unbalanced data for smart city solution based on IoT using classification and adaboostm1** - Valerij Grašič

**T.2A.4 Edge Intelligence for Cybersecurity: AI-Powered Threat Detection in Hardware Infrastructure** - Milovan Medojević, Velibor Ilić, Dragiša Žunić, Aleksandar Rikalović

**T.2A.5 Dataflow Hardware Advancements for Supporting Artificial Intelligence Algorithms** - Nenad Korolija

**T.2A.6 AI-Powered Prior Art Search: Towards Enriching Intellectual Property Management?** - Ana Hafner, Dolores Modic, Nadja Damij, Andrej Furlan

**T.2A.7 The evaluation of retrieval augmented generation tasks for different large language models fine-tuned for the Serbian language** - Mina Nikolić, Aleksandar Stanimirović, Leonid Stoimenov

**T.2A.8 Graph Neural Networks and Transformer Embeddings: A Hybrid Approach to Improving Recommender Systems** - Marko Njegomir, Matija Matović

**Session T.2B 15:00-17:00**
**Machine Learning and Data Mining**
Chair: Vladimir Ranković

**T.2B.1 Sustainable Concrete Mix Designs by Machine Learning Approaches** - Ayman Karaki, Ahmad Hammoud, Bekassyl Battalgazy and Miloš Dujović*

**T.2B.2 Advanced risk management practices – the application of the exact solutions methods for resilience factors improvement** - Aleksandar V. Aleksić, Michael Huber*, Danijela P. Tadić and Snežana B. Nestić

**T.2B.3 Scaling methodology and phase portraits analysis** - Alina Fedorova, Kipelkin Ivan, Ivana Krtolica, Max Talanov

**T.2B.4 Processing of big data after transcriptome sequencing at single cell resolution** - Nevena Milivojević Dimitrijević, Biljana Ljujić, Marina Gazdić Janković, Ana Mirić, Marko Živanović, Nenad Filipović

**T.2B.5 Local Execution of Large Language Models: Democratizing AI through On-Device Optimization** - Kristina Jovanović, Milan Bjelica

**T.2B.6 Community event discovery using x datastream** - Adedotun Ogundare, Stevan Gostojić, Abdullahi Saleh, James Orban

**T.2B.7 Design of new potential inhibitor of the GABAa receptor assisted by artificial intelligence** - Tamara Mladenović, Dusica Simijonović, Dejan Milenković, Marko Antonijević, Edina Avdović, Sandra Milić, Zoran Marković

**T.2B.8 Multi-layer spectral clustering algorithm based on an adjustment of Laplacian matrix** - Aleksandar Trokičić, Milan Bašić

**T.2B.9 Comparing different approaches for modelling soil properties from Near infrared spectroscopy data** - Ognjen Antonijević, Branislav Bajat, Milan Kilibarda, Dragutin Protić, Aleksandar Sekulić, Petar Bursać, Milutin Pejović, Slobodan Jelić

| | |
|---|---|
| 17:00 - 17:30 | Coffee Break |

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|---|---|
| 17:30 - 18:00 | Keynote speakers:<br>**Integrating AI and IoT for Personalized Healthcare**<br>**Prof. Emil Jovanov**<br>Chair: Amir Amini |

**Session T.3A: 18:00-20:15**
**Mini-Symposium VII: Heritage Mining: Theory and Examples**
Chair: Veljko Milutinović

**T.3A.1 Modeling user behavior in big systems -** Milan Bradonjić

**T.3A.2 Heritage Mining: Theory and Examples -** Veljko Milutinović

**T.3A.3 Correlation-Based Dimensionality Reduction for Multi-Source Samples -** Saša Malkov, Vladimir Brusić, Nenad Mitić

**T.3A.4 Text-to-SQL translation: Application of deep learning approach for Serbian language -** Zoran Babović

**T.3A.5 Can ChatGPT write parallel code? -** Marko Mišić, Matija Dodović

**T.3A.6 Applied Artificial Intelligence in detecting Hate Speech -** Jelica Cincović, Uroš Radenković, Marko Mićović, Adrian Milaković, Vladimir Jocović and Dražen Drašković

**T.3A.7 Data analysis techniques and detection of propaganda in Serbian online media in 2023 -** Dražen Drašković, Mihajlo Ogrizović, Matija Dodović, Miloš Obradović

**T.3A.8 Scientific production and collaboration patterns of medical researchers: a case study in epidemiology and infectious diseases -** Iva Potkonjak, Predrag Obradović and Marko Mišić

**T.3A.9 Transforming learning: adapting to generative AI technologies in Serbian educational paradigm -** Nebojša Stanojević, Ranka Popovac, Tijana Čomić, Uroš Milićević, Dragan Vukmirović

**T.3A.10 Physics-Informed Neural Networks for Streamlined Snap-Through Instability Analysis of Shallow Truss -** Filip Đorđević, Marko Marinković

**Session T.3B: 18:00-20:15**
**AI in Domain-specific application**
Chair: Aleksandra Vulović

**T.3B.1 Analysis of association between social media signals and stock return on Asian markets -** Milan Zdravković, Pavel Dudko

**T.3B.2 Influence of Dimensionality Reduction Approaches on Various Machine Learning Models for a Biomedical High-Dimension Dataset -** Sandi Baressi Šegota, Nikola Anđelić Jelena Štifanić, Daniel Štifanić, Zlatan Car

**T.3B.3 Fuzzy-based characterization of ovarian tumors -** Marija Branković, Ana Mirić, Tijana Geroski, Marko Živanović, Nenad Filipović

**T.3B.4 Machine learning-based prediction of immunomodulatory properties of polymers: towards a faster and easier development of anti-inflammatory biomaterials -** Aghilas Akkachea, Lisa Clavier, Oleh Mezhenskyid, Kateryna Andriienkova, Thibaut Soubriéd, Philippe Lavalle, Nihal Engin, Varvara Gribova

**T.3B.5 Comparing Vision Transformers and Convolutional Neural Networks for Fungi Microscopic Image Classification -** Mina Milanović, Aleksandar Milosavljević, Dragan Janković and Marina Ranđelović

**T.3B.6 Turbojet engine control with neural network-based feedforward -** Luka Miličić, Vladimir Kuzmanović, Ivana Todić

**T.3B.7 Application of recurrent neural networks in Assessing Drivers' Oscillatory Comfort during fore-and-aft vibrations -** Igor Saveljić, Slavica Mačužić Saveljić, Tijana Đukić, Branko Arsić, Nenad Filipović

**T.3B.8 Parameter Sensitivity Analysis in Multiscale Agent-Based Modeling of Atherosclerotic plaque progression -** Lemana Spahić, Leo Benolic, Safi Ur-Rehman Qamar, Nenad Filipović

**T.3B.9 Deep learning segmentation of the porcine superficial femoral arteries oct images -** Miloš Anić, Sotiris Nikopoulos, Siaravas Konstantinos, Christos Katsouras, Vassiliki Potsika, Nenad Filipović, Dimitrios Fotiadis

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| 20:30 - 24:00 | Gala Dinner |

## Friday 24 May 2024

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| 9:00 - 9:30 | Keynote speaker:<br>**AI-disrupted Medicine and How to Apply it in Serbia**<br>**Prof. Dubravko Ćulibrk**<br>Chair: Tijana Geroski |

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| 9:30 - 10:00 | Coffee Break |

**Session F.1A: 10:00-11:30**
**Mini-Symposium IV: AI and Social Wellbeing**
Chair: Ljubiša Bojić

**F.1A.1 A novel model for diversifying ai based recommender systems for societal well-being -** Zorica Dodevska, Ljubiša Bojić, Boris Delibašić

**F.1A.2 Benchmarking GPT-4 in sentiment analysis and bias detection: an evaluation of advanced large language models in textual understanding -** Ljubiša Bojić, Nenad Pantelić, Milan Čabarkapa

**F.1A.3 Adapting all-optical activation functions for predicting stock prices on the Frankfurt stock exchange -** Mladen Banović, Mihailo Todorović, Marko Barjaktarović, Lidija Barjaktarović, Jasna Crnjanski, Marko Krstić, Dejan Gvozdić

**F.1A.4 Unmanned Vehicles - Technical perspective of AI applications and social impact -** Vladimir Đapić, Isidora Grujić, Marijana Gavrilović Božović, Mina Vasković Jovanović, Jasna Radulović, Milan Čabarkapa

**F.1A.5 Application of the AHP method to the investment management of local municipalities and countries -** Aleksandar Kemiveš, Jelena Mišić

**Session F.1B: 10:00-11:30**
**AI in Domain-specific application**
Chair: Emil Jovanov

**F.1B.1 Artificial intelligence anxiety among young adults in Montenegro -** Irina Stamatović, Hakile Resulbegoviq

**F.1B.2 Can artificial intelligence mitigate intra-organizational moral outrage? A theory-based model -** Marko Selaković, Nikolina Ljepava, Marija Gačić, Nenad Filipović

**F.1B.3 AI-generated softfakes as disruptors of politician-citizen interaction: ethical considerations -** Nikolina Ljepava, Marko Selaković, Marija Gačić, Nenad Filipović

**F.1B.4 Predicting electrospun PCL/PEG nanofiber diameter using artificial neural network -** Jana Baščarević, Katarina Virijević, Leo Benolić, Marko Živanović, Nenad Filipović

**F.1B.5 Factors influencing ai prediction of socially undesirable behaviors of foster care children -** Ana Miletić Vučković, Marko Selaković, Nikolina Ljepava, Marija Gačić, Nenad Filipović

**F.1B.6 Feature selection for lying posture classification -** Đorđe Nešković, Ilija Tanasković, Nadica Miljković

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| 11:30 - 12:00 | Keynote speaker:<br>**Using Explainable AI (xAI) to Predict the Conversion from Mild Cognitive Impairment to Alzheimer's Disease**<br>**Prof. Themis Exarchos**<br>Chair: Smiljana Tomašević |

**Session F.2A: 12:00-13:30**
**Mini-Symposium V: Future of Workforce**
Chair: Jelena Ćulibrk

**F.2A.1 AI as a Catalyst for Research Talent Development: Elevating Employer Branding to Forge a Cutting-Edge Workforce -** Milica Brković, Jelena Ćulibrk, Jelena Spajić, Nemanja Tasić

**F.2A.2 The role of artificial intelligence in transforming hotels in developing countries, with a special focus on the republic of Serbia -** Tamara Gajić, Andrea Ivanišević

**F.2A.3 How artificial intelligence is transforming human resource management? -** Gala Šikoparija, Jelena Ćulibrk, Bojana Jokanović, Nenad Medić

**F.2A.4 Enhanced Biomarker Detection and Health Monitoring Using AI-Driven Multi-Sensor Integration -** Matija Štrbac, Miloš Kostić, Goran Bijelić

**F.2A.5 DeepTech2M search API for Research Funding -** Luka Todorović, Jelena Tomić, Ana Kaplarević Mališić, Nenad Grujović, Fatima Živić

**Session F.2B: 12:00-13:30**
**AI in Domain-specific application**
Chair: Igor Saveljić

**F.2B.1 Automatization of 3D reconstruction of coronary arteries from angiography projections using AI-enhanced segmentation techniques -** Tijana Đukić, Ognjen Pavić, Lazar Dašić, Tijana Geroski, Nenad Filipović

**F.2B.2 Artificial intelligence-based anomaly detection with identifying and mitigating abnormal traffic patterns associated with the ddos attack in software–defined networking -** Stefan Biševac, Aleksandar Atanasijević, Aleksandar Jokić, Marko Šarac

**F.2B.3 Machine learning approach for predicting judicial case outcome -** Adedotun Ogundare, Stevan Gostojic, Augustine Tarawali, David Soumano

**F.2B.4 Impact of the development of artificial intelligence on the stock market –** Nemanja Lojanica, Dragan Stojković, Milica Kaplarević

**F.2B.5 Exploring Word2Vec Models for Capturing the Similarity of Codon Embeddings -** Anđa Denić, Jelena Pejić, Aleksandar Trokičić

**F.2B.6 On Semantic Association Capabilities of GPT LLMs in a Game of Word Associations -** Aleksandar Kondić, Vladimir Milovanović

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| 13:30 - 14:30 | Buffet Lunch |

**Session F.3A: 14:30-16:00**
**Mini-Symposium VI_1: Delivering on the Promise of AI to Improve Health Outcomes**
Chair: Tijana Geroski

**F.3A.1 Multilabel classification process optimization through the utilization of transfer learning approaches supported by decision postprocessing techniques -** Ognjen Pavic, Tijana Geroski, Lazar Dašić, Nenad Filipović

**F.3A.2 Pixels to Prognosis: A Data-Driven Deep Learning Approach for Gastric Cancer diagnosis -** Đorđe Karisic, Tijana Geroski, Vesna Ranković, Nenad Filipović

**F.3A.3 Development of convolutional neural network for classification of heart sounds utilizing mel-frequency cepstral coefficients -** Lazar Dašić, Tijana Geroski, Ognjen Pavić, Nenad Filipović

**F.3A.4 AI- and Computer-Based Module for 3D Reconstruction of Patient-specific Carotid Arteries and Plaque Progression Simulation -** Smiljana Tomašević, Tijana Đukić, Miloš Anić, Branko Arsić, Igor Saveljić, Branko Gakovic, Igor Končar, Nenad Filipović

**F.3A.5 Folder design optimization with genetic algorithm for drug coated balloon folding -** Leo Benolić, Stratakos Efstathios, Elisabetta Stretti, Giancarlo Pennati, Spyridon Psarras, Vassilis Kostopoulos, Nenad Filipović

**F.3A.6 Development of a platform for displaying medical results -** Jelena Živković, Đorđe Ilić, Ognjen Pavić, Lazar Dašić, Tijana Geroski, Tijana Đukić, Nenad Filipović

**F.3A.7 Predicting absorbance for different concentration of AgNPs using artificial neural network -** Leo Benolić, Safi Ur Rehman Qamar, Lemana Spahić, Nenad Filipović

**F.3A.8 Identification of Potential Biomarkers and Pathways in Dilated Cardiomyopathy Using Bioinformatics Analysis -** Tamara Mladenović, Sanja Matić, Jelena Pavić, Katarina Virijević, Nenad Filipović

**Session F.3B: 14:30-15:30**
**AI in Domain-specific application**
Chair: Dubravko Ćulibrk

**F.3B.1 A brief survey of ai-based methods in astrodynamic problems with disturbances, noises and uncertainties -** Natalia Amelina, Oleg Granichin, Yury Ivanskiy, Kseniia Kopylova, Margarita Maksimenko, Vadim Sakharov and Aleksei Tikhonov

**F.3B.2 AI-based intelligence versus individual intelligence: Regarding designing better environmental policies -** Petraq Papajorgji, Howard Moskovitz

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| 16:00 - 16:30 | Coffee Break |

**Session F.4A: 16:30-18:30**
**Mini-Symposium VI_2: Delivering on the Promise of AI to Improve Health Outcomes**
Chair: Marko Živanović

**F.4A.1 The use of artificial intelligence in predicting the significance of markers related to cell movement -** Dragana Šeklić, Dalibor Nikolić, Milena Jovanović, Katarina Virijević, Marko Živanović, Biljana Ljujić, Igor Saveljić, Nenad Filipović

**F.4A.2 AI-Enhanced Extended Reality in Medicine -** Filip Filipović, Tijana Geroski, Aleksandra Vulović, Nenad Filipović

**F.4A.3 Utilization of Augmented reality for improvement of balance disorders -** Đorđe Ilić, Aleksandra Vulović, Nenad Filipović

**F.4A.4 Overview of the Integration of Genetic Algorithms and Reinforcement Learning Techniques -** Bogdan Milićević, Vladimir Milovanović, Miljan Milošević, Nenad Filipović

**F.4A.5 Cardiac segmentation using unetr: a transformer based deep learning approach on the acdc dataset -** Tijana Geroski, Ognjen Pavić, Lazar Dašić, Amir Amini, Nenad Filipović

**F.4A.6 The possibility of bone fracture prediction in osteoporosis treatment through use of ai -** Gordana Jovičić, Aleksandra Vulović, Arso Vukićević, Miloš Jovičić, Nenad Đorđević, Nenad Filipović

**F.4A.7 Internet of medical things (iomt): smart hearing aids, today and tomorrow -** Vesna Simikić, Ivana Maletić-Sekulić

**F.4A.8 Evaluation of magnetized micro- and nano-object parameters using artificial intelligence -** Vitaly Goranov, Alexander Makhaniok

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| 18:30 - 19:00 | Closing Ceremony |

# ADVANCED RISK MANAGEMENT PRACTICES – THE APPLICATION OF THE EXACT SOLUTIONS METHODS FOR RESILIENCE FACTORS IMPROVEMENT

**Aleksandar V. Aleksić, Michael Huber*, Danijela P. Tadić and Snežana B. Nestić**

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## Abstract

In the context of organizational resilience, branch and bound algorithms can be leveraged to determine the most suitable management techniques from a set of options, considering factors such as cost and time constraints. This paper presents a novel approach for assessing the suitability of methods aimed at improving organizational resilience factors. The proposed algorithm integrates fuzzy logic and exact solutions methods. The algorithm comprises several steps, including fuzzy rating of method suitability, determination of aggregate suitability values and assessment of method application costs. Furthermore, a multidimensional optimization problem is formulated to maximize the overall effectiveness of selected methods while considering budgetary constraints. To efficiently navigate the solution space and identify near-optimal solutions, a Branch and Bound algorithm is employed. The proposed framework offers a comprehensive methodology for decision-makers to make informed choices regarding method selection and resource allocation for business process improvement initiatives. Experimental results demonstrate the efficacy and practical applicability of the proposed approach in real-world scenarios.

**Keywords**: resilience factors, optimization, Branch and Bound.