Book of Abstracts

The Fifth Serbian International Conference on Applied Artificial Intelligence (SICAAI)

May 20-21, 2026, Kragujevac, Serbia

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Organizers

- University of Kragujevac

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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 Fifth Serbian International Conference on Applied Artificial Intelligence (AAI2026) which takes place at Kragujevac, Serbia, on May 20th-21st, 2026.

AAI2026 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

AAI2026 will host 16 keynote researchers**.** We have received more than 100 high-quality research papers. As a result of the strict review process and evaluation, the committee selected over 80 papers as extended abstracts.
After the review, full papers from the AAI2026 conference will be published by Springer Verlag in the series "**Applied Artificial Intelligence 5: Medicine, Biology, Chemistry, Financial, Games, Engineering**" and Special issue of IEEE OPEN JOURNAL OF ENGINEERING IN MEDICINE AND BIOLOGY with title: "**AI and computational modelling in cardiovascular disease**". 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 at Kragujevac and a productive conference.

Prof. Nenad Filipović, Conference Program Chair

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ADVANCES IN ARTIFICIAL INTELLIGENCE AND DEEP LEARNING FOR NEUROSONOGRAPHIC AND CHEST X-RAY ANALYSIS OF PREMATURE INFANTS

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Abstract:

Premature infants represent one of the most vulnerable patient populations in neonatology, frequently affected by severe neurological and respiratory complications that require rapid, reliable, and accurate diagnosis. Conditions such as hypoxic-ischemic encephalopathy (HIE) and respiratory distress syndrome (RDS) are among the leading causes of morbidity and mortality in premature newborns, often associated with long-term developmental and health consequences. Early detection and continuous monitoring of these conditions are essential for improving therapeutic outcomes and reducing the risk of severe complications. In recent years, advances in artificial intelligence (AI), deep learning, and computer-assisted medical imaging have opened new possibilities for improving diagnostic precision, reducing subjectivity in image interpretation, and supporting clinical decision-making in neonatal intensive care units (NICUs).

This paper presents an overview of contemporary AI-based approaches in neonatal imaging, with a particular focus on neurosonographic analysis of HIE and chest X-ray analysis of RDS in premature infants. The presented methodologies include convolutional neural network (CNN)-based classification of neurosonographic findings using echogenicity analysis and Delta E CIE76 quantification, as well as computer-assisted lung segmentation and radiographic analysis combined with blood gas parameters' evaluation. The neurosonographic classification model demonstrated high performance in differentiating normal, moderate, and severe pathological findings, while lung segmentation algorithms achieved promising accuracy and robustness in monitoring respiratory recovery and evaluating disease progression. In addition, the integration of quantitative image analysis with clinical parameters enables more objective assessment of neonatal conditions and supports the development of intelligent diagnostic support systems.

By combining medical image processing, machine learning, and clinical data analysis, these approaches demonstrate the considerable potential of AI technologies for early diagnosis, treatment planning, and continuous monitoring of premature newborns. Furthermore, the study highlights the growing importance of intelligent diagnostic systems in modern neonatology and emphasizes the future potential of explainable and multimodal AI models for improving neonatal healthcare outcomes, optimizing therapeutic strategies, and advancing personalized neonatal care.

Keywords: neonatal imaging, premature infants, neurosonography, chest X-ray analysis, hypoxic-ischemic encephalopathy, respiratory distress syndrome, convolutional neural networks, medical image processing.

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