

# ENIAC 2024

## Proceedings

**21st National Meeting on Artificial and  
Computational Intelligence**

**XXI Encontro Nacional de Inteligência  
Artificial e Computacional**

**Event co-located with the 34th Brazilian Conference on Intelligent Systems  
(BRACIS)**

**Belém - PA, Brazil, November 17 to 21, 2024**

Diego Furtado Silva (ICMC-USP)  
Rosiane de Freitas-Rodrigues (IComp/UFAM)

**(Program Chairs and Editors)**

## **PREFACE**

The National Meeting on Artificial and Computational Intelligence (ENIAC) is one of Brazil's premier forums for researchers, practitioners, educators, and students to present and discuss innovations, trends, experiences, and advancements in Artificial and Computational Intelligence. ENIAC offers the opportunity, especially for undergraduate and graduate students, to participate in a large-scale scientific conference and exchange ideas with experienced researchers.

Building on the tradition of previous editions, this year's meeting featured a special track dedicated to papers authored by undergraduate students. These submissions underwent the same rigorous review process as papers in the main track, ensuring high quality and inclusivity.

The 21st ENIAC was held with the 34th Brazilian Conference on Intelligent Systems (BRACIS). The program committee was coordinated by Diego Furtado Silva (ICMC-USP) and Rosiane de Freitas-Rodrigues (IComp/UFAM).

This proceedings comprises 85 full papers selected through a double-anonymous review process, where authors' names and affiliations were omitted to ensure impartiality. At least two experts in the relevant research area reviewed each paper.

## **TOPICS OF INTEREST**

The event focused on articles containing new ideas, discussions on existing work, practical studies, and experiments relevant to the field of Artificial and Computational Intelligence, which have not been published. The topics of interest included, but were not limited to:

- Analytics and Data Science
- Artificial Life and Real-Time Simulation
- Artificial Neural Networks and Deep Learning
- Automated Planning, Routing and Scheduling
- Automated Reasoning
- Bioinformatics and AI in Medicine/Healthcare
- Combinatorial Optimization
- Complex Networks
- Constraint Satisfaction Problem and Programming
- Decision Support Systems
- Distributed AI and Agent/Multiagent Systems
- Education for AI and AI for Education
- Embedded AI
- Emerging Countries and Public Policies and AI
- Evolutionary Computation and Metaheuristics
- Explainable AI
- Ethics and Human-centric AI
- Foundation Models and Systems
- Fuzzy Systems

- Game Playing and Intelligent Interactive Entertainment
- Generative AI
- Graph-Based AI
- Hybrid Systems and Metaheuristics
- Intelligent Data Analysis
- Intelligent Human-Computer Interfaces
- Intelligent Systems
- Intelligent Robotics
- Knowledge Acquisition and Base Construction
- Knowledge Representation and Reasoning
- Large Language Models
- Logic Programming
- Machine Learning
- Model-Based Reasoning
- Multidisciplinary AI and CI
- Natural Language Processing
- Ontologies, Semantics, and Explanations
- Pattern Recognition and Cluster Analysis
- Quantum Computing and Learning
- Reinforcement Learning
- Software Tools for Artificial Intelligence
- Temporal and Spatio-Temporal Data Mining
- Time Series
- Transformation of Work through AI
- Transformers
- Trustworthy Software and AI Systems
- Vision AI

## **BEST PAPERS**

The best papers selected from the main track were:

**1st place:** Open-World Text Classification by Combining Weak Models and Large Language Models. Authors: Daniel Pereira Zitei, Kenzo M. Sakiyama, Ricardo M. Marcacini.

**2nd place:** On the use of Large Language Models to Detect Brazilian Politics Fake News. Authors: Marcos Paulo Silva Gôlo, Adriel Lenner Vinhal Mori, William Gonçalves de Oliveira, Jacson Rodrigues Barbosa, Valdemar Vicente Graciano Neto, Eliomar Araújo de Lima, Ricardo Marcondes Marcacini.

**Honorable Mention:** Hybrid CNN-GNN Models in Active Sonar Imagery: an Experimental Evaluation. Authors: Gabriel Arruda Evangelista, João Baptista de Oliveira e Souza Filho.

**Honorable Mention:** Music genre classification using centrality measures of complex brain connectivity networks. Authors: Andrés Eduardo Coca Salazar.

The best papers selected from the undergraduate track were:

**1st place:** Optimizing ECG Audits: Clustering-Based Identification of Ambiguous Exams. Authors: Pedro B. Rigueira, Guilherme H. G. Evangelista, Luisa G. Porfírio, Caio Souza Grossi, Arthur Buzelin, Gisele L. Pappa, Gabriela M. M. Paixão, Antonio Ribeiro, Wagner Meira Jr.

**2nd place:** ECG-ResNeXt: Age Prediction in Pediatric Electrocardiograms and Its Correlations with Comorbidities. Authors: Pedro Robles Dutenhofner, Gabriel Eduardo Lemos dos Santos, Turi Andrade Vasconcelos Rezende, Jose Geraldo Fernandes, Diogo Tuler Chaves, Gisele Lobo Pappa, Gabriela Miana de Mattos Paixão, Antônio Horta Ribeiro, Wagner Meira Jr.

**3rd place:** Pre-trained Language Models for Multi-Label Text Classification of Competitive Programming Problems. Authors: Bruno Vargas de Souza, Ana Sofia Schweizer Silvestre, Victor Hugo França Lisboa, Vinicius Ruela Pereira Borges.

**Honorable Mention:** Credit Score: Proposal of a Multi-Source Intelligent System for Predictive Credit Analysis. Authors: Bernardo Dirceu Tomasi, João Mário Lopes Brezolin.

#### **JUDGING COMMITTEE OF THE BEST PAPER MAIN TRACK**

- Eulanda Miranda dos Santos (UFAM)
- Rosiane de Freitas-Rodrigues (UFAM)

#### **JUDGING COMMITTEE OF THE BEST PAPER UNDERGRAD TRACK**

- Eliomar Araújo de Lima (UFG)
- João Baptista de Oliveira e Souza Filho (UFRJ)

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