

EPIA 2024

international conference on artificial intelligence

03-06 September | Viana do Castelo

CONFERENCE PROGRAM

OUR SCHEDULE

04 sep

05 sep

06 sep

08.30 – 09.00 REGISTRATION

HALL

Accreditation and Registration

09.00 – 09.30 OPENING SESSION

AUDITORIUM

EPIA OPENING CEREMONY

Luís Paulo Rodrigues (Pro-President of the IPVC)

Pedro Arezes (Dean of the School of Engineering of the University of Minho)

Luís Nobre (Mayor of the Viana do Castelo City Council)

Pedro Moreira (Local Organization)

Manuel Filipe Santos (Organization)

Goreti Marreiros (Chair of APPIA)

09.30 – 10.30

ROOM SESSIONS

GAI – 01

ROOM 1

CHAIR: JOSÉ MACHADO

- **Detection and Classification of Spam in Social Media Comments using Artificial Intelligence – a Case Study**
Jorge Ribeiro and Vasco Alves
- **A Comparative Study of Continual Backprop**
Jacopo Silvestrin, Francisco S. Melo and Manuel Lopes
- **Time Series Data Augmentation as an Imbalanced Learning Problem**
Vitor Cerqueira, Nuno Moniz, Ricardo Inácio and Carlos Soares

AIOTA – 01

ROOM 2

CHAIR: FRANCISCO OLIVEIRA

- **Pruning End-Effectors – State Of The Art Review**
Francisco Oliveira, Vitor Tinoco, António Valente, Tatiana Pinho, José Boaventura Cunha and Filipe N. Santos
- **An apple counting system robust to multiple intermittent occlusions**
Gonçalo Matos, Tiago G. Oliveira, Filipe Silva, Carlos Santiago, Francisco Martinho, Miguel Leão, Filipe Fonseca, José Silvestre, Ricardo Saldanha and Ernesto M. Morgado
- **Data-Driven Digital Twin Based Energy Flexibility Investigation for Commercial Greenhouse Production Process**
Daniel Howard, Magnus Værbak, Zhipeng Ma, Bo Nørregaard Jørgensen and Zheng Ma

AMIA – 01

ROOM 3

CHAIR: GORETI MARREIROS

- **Data-Driven Academic Performance Evaluation: A Smart Platform Approach**
Yeray Mezquita, Javier Parra, Ricardo S. Alonso and Javier Prieto
- **Bridging Fashion and Technology: Synthetic Human Models for an Enhanced E-commerce Experience**
Ana Rita Duarte and Luís Conceição
- **A Multi-Agent System Approach with Generative AI for Improved Elderly Daily Living**
Vitor Crista, Diogo Martinho and Goreti Marreiros

10.30 – 11.00

HALL

COFFEE BREAK

11.00 – 12.00

ROOM SESSIONS

GAI – 02

ROOM 1

CHAIR: PAULO CORTEZ

- **Domain reductions after preprocessing: Effects on dynamic variable ordering in constraint satisfaction search**
Richard Wallace
- **Efficient Image Search and Retrieval System in Cloud Platforms**
Francisco Izquierdo, Cesar Analide and Nuno Silva
- **Unveiling Cetacean Voices: Entropy-Powered Spectrogram Denoising for Deep Learning Applications**
Francisco Bicudo, Sofia

AIOTA – 02

ROOM 2

CHAIR: FRANCISCO OLIVEIRA

- **Towards a Conversational AI Chatbot to Assist Farmers in Disease Detection**
Vinuri Piyathilake, Thuthi Dilni, Randil Pushpananda, Lasanthi De Silva and Yumna Zaheed
- **The Impact of the EU's AI Act and Data Act on Digital Farming Technologies**
Lucas Ramon Ciutat

AMIA – 02

ROOM 3

CHAIR: PETER MIKULECKY

- **Predictive Analytics in Education: A comparative analysis of machine learning models for predicting student performance**
Dalila Durães, Beatriz Lacerda, Rita Bezerra and Paulo Novais
- **Smart Cities as Affective Environments**
Patrik Urbanik and Peter Mikulecky

SSAI – 01

ROOM 4

CHAIR: PEDRO MOREIRA

- **Bayesian Causal Inference in Deep Spiking Neural Networks**
Dylan Perdigão
- **Telemedicine and AI devices for the optimization of hospital processes, a methodology for the introduction of new technology from a legal perspective and a process optimization perspective**
Marinella Quaranta
- **Predictive Justice: New Horizons? An Investigation into the Possibility of the Prediction Application to**

Cavaco, Luís Freitas,
Philippe Verborgh, Ruth
Esteban, Pauline Gauffier
and Joaquim Silva

Cases concerning Personal
Rights
Marianna Molinari

- An agent-based methodological approach to geospatial AI for disruption management
Jadna Cruz

12.00 – 13.00
ROOM SESSIONS

KEYNOTE

ADITORIUM
CHAIR: JOSÉ MACHADO

VIRGINIA DIGNUM

BEYOND THE AI HYPE: BALANCING INNOVATION AND SOCIAL RESPONSIBILITY

13.00 – 14.30
RESTAURANT

LUNCH

14.30 – 16.00
ROOM SESSIONS

AIT5

ROOM 1
CHAIR: ALBERTO FERNANDEZ

- Fuel Efficiency Analysis of the Public Transportation System Based on the Gaussian Mixture Model Clustering
Zhipeng Ma, Bo Nørregaard Jørgensen and Zheng Grace Ma
- Multi-Agent Based Simulation for Decentralized Electric Vehicle Charging Strategies and their Impacts
Kristoffer Christensen, Bo Nørregaard Jørgensen and Zheng Grace Ma
- Bi-LSTM Neural Networks for Traffic Flow Prediction: a comprehensive analysis
Bernardo Alves, Tânia Fontes and Rosaldo Rossetti
- Imbalance management on free-floating VSS: a multi-agent model approach
Marcelo Javier Karanik, Alicia Pina Zapata and Sara García Rodríguez

GenAI

ROOM 3
CHAIR: JOSÉ MACHADO

- Large Language Model for Querying Databases in Portuguese
Lourenço Figueiredo, Paulo Pinheiro, Luís Cavique and Nuno Marques
- A Novel Integration of Federated Learning and LSTM for Synthetic Time Series Generation
Gurjot Singh, Pritika Sharma and Jatin Bedi
- Assessment on the Effectiveness of GitHub Copilot as a Code Assistance Tool: An Empirical Study
Carlos Gonçalves and Célia Talma Gonçalves
- AICIS: A System for Identifying AI Contribution in Textual Content
Ahmad Hashemi and Wei Shi

SSAI – 02

ROOM 4
CHAIR: PAULO NOVAIS

- Using Machine Learning to Leverage Dynamic Population Synthesis
Iohan Sardinha
- Towards An Agent-Based Decision Support System for Quality Assurance in Smart Education
Marzie Sadat Kasaii
- Sustainability by Design in Socio-Technical Systems
Mariam Afonso
- The Meaning of Being Underage In The Digital Era
Beatrice Balzola
- Future-Proof Regulatory Frameworks for Genome Editing in Agriculture
Lucas Ramon Ciutat

16.00 – 17.00
ROOM SESSIONS

COFFEE BREAK

SSAI POSTERS

17.00 – 17.30
DISPLACEMENT

DISPLACEMENT TO BIBLIOTECA MUNICIPAL DE VIANA DO CASTELO

Library Map Location

Transportation to the library will be provided for participants who need a means of transport.
This service will be available for one-way trips only.

17.30 – 18.30
ROOM SESSIONS
EXTERNAL

AI ROUND TABLE

BIBLIOTECA MUNICIPAL,
ROOM COUTO VIANA

Inteligência Artificial na Sociedade: Oportunidades e Desafios

Table Speakers
João Gama FEP / LIAAD

Paulo Novais EEUM / LASI
Luís Paulo Reis FEUP / LIACC
Goreti Marreiros APPIA

Pedro Pereira IPVC – Moderator

18.30 – 19.00

WELCOME SESSION

FOLLOWED BY THE SERVING OF A VINHO
VERDE OF HONOR.

BIBLIOTECA MUNICIPAL, ROOM COUTO VIANA

The welcome session will include the participation of the Mayor of the Viana do Castelo City Council, Luís Nobre, the Pro-President of the IPVC, Luís Paulo Rodrigues and the vice-Rector of the University of Minho, Eugénio Campos Ferreira.

OUR SCHEDULE

04 sep

05 sep

06 sep

08.30 – 09.00 REGISTRATION

HALL

Accreditation and Registration

09.00 – 10.30

ROOM SESSIONS

AI4IS – 01

ROOM 1

CHAIR: FILIPE PORTELA

- **Exploration of Computer Vision Systems in the Recognition of Characteristics in Parts in an Industrial Environment**
Jorge Ribeiro and João Rodrigues
- **Approximate Nash Equilibrium Learning for n-Player Markov Games in Dynamic Pricing**
Larkin Liu
- **Data Mining Models to predict order with delays: a textile case study**
Rita Miranda and Filipe Portela
- **Comparing Aggregated and Separate Models for Crowd Density Forecasting**
Iohan Sardinha, Ana Paula Rocha and Rosaldo J. F. Rossetti

AIPES – 01

ROOM 2

CHAIR: ZITA VALE

- **A Review of Intelligent Technologies in District Heating Systems**
Zheng Ma and Bo Nørregaard Jørgensen
- **Intelligent Data Mining on Power Systems: Examples from Case Studies**
Sérgio Ramos, João Soares, José Almeida and Zita Vale
- **Application of a genetic algorithm for optimising the location of electric vehicle charging stations**
João Pinto, Mario Andres Mejia Alzate, Leonardo H. Macedo, Vitor Filipe and Tiago Pinto
- **Retrieval-augmented generation based assistant: a smart home case study**
Bruno Ribeiro, Luis Gomes and Zita Vale

KDBI – 01

ROOM 3

CHAIR: JOÃO GAMA

- **Extensible Data Ingestion System for Industry 4.0**
Bruno Oliveira, Óscar Oliveira, Teresa Peixoto, Carla Pereira and Fillipe Ribeiro
 - **Next Location Prediction with Time-Evolving Markov Models over Data Streams**
Thiago Andrade and João Gama
 - **Improving Fraud Detection with 1D-Convolutional Spiking Neural Networks through Bayesian Optimization**
Dylan Perdigão, Francisco Antunes, Catarina Silva and Bernardete Ribeiro
 - **A Benchmark of Automated Multivariate Time Series Forecasting Tools for Smart Cities**
Pedro Pereira, Nuno Costa, Pedro Mestre and Paulo Cortez
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10.30 – 11.00

HALL

COFFEE BREAK

11.00 – 12.30

ROOM SESSIONS

AI4IS – 02

ROOM 1

CHAIR: FILIPE PORTELA

- **Evaluation of Machine Learning Methods for Fire Risk Assessment from Satellite Imagery**
Joao Carlos N. Bittencourt, Daniel G. Costa, Paulo Portugal and Francisco Vasques
- **Geometrically-Informed Tool Recommendation in High-Speed Machining**
Jonathan Guerne, Hatem Ghorbel, Célien Donzé, Valérie Briquez, Damien Lüthi, Pierre Falbriard and Thibaut Nicoulin
- **A Reinforcement Learning based Recommender System Framework for Web Apps: Radio and Game aggregators scenarios**
André Batista, José Manuel Torres, Pedro Sobral, Rui Moreira, Christophe Soares and Ivo Pereira

AIPES – 02

ROOM 2

CHAIR: TIAGO PINTO

- **Dynamic online parameter configuration of genetic algorithms using reinforcement learning**
Vitor Oliveira, Tiago Pinto and Carlos Ramos
- **Assessing Advanced Computer Vision Techniques in Aerial Imagery: A Case Study on Transmission Tower Identification**
Daniela Lopes Freire, Andre C. P. L. F. de Carvalho, Augusto José Peterlevitz, Mateus Antonio Chinelatto, Ricardo Dutra da Silva and Juan Fernando Rojas Perea
- **Generative Adversarial Networks for Synthetic Meteorological Data Generation**
Diogo Viana, Rita Teixeira, Tiago Soares, José Baptista and Tiago Pinto

KDBI – 02

ROOM 3

CHAIR: PAULO CORTEZ

- **A Data Drift Approach to Update Deployed Energy Prediction Machine Learning Models**
Hélder Teixeira, Arthur Matta, Andre Pílastri, Luis Ferreira, Pedro Pereira, Carlos Gonçalves and Paulo Cortez
 - **Optimising Dialogue Flow Discovery**
David Ressurreição, Patrícia Ferreira, Ana Alves and Hugo Gonçalo Oliveira
 - **BI-Enabled Web Visualization of In-Place Inclinator Data for Geotechnical Applications**
João Palma, Nuno Marques and Ricardo Santos
 - **An Empirical Evaluation of DeepAR for Univariate Time Series Forecasting**
Ricardo Gomes, Carlos Soares and Luis Paulo Reis
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12.30 – 13.30

AUDITORIUM

KEYNOTE

AUDITORIUM

CHAIR: AMILCAR CARDOSO

13.30 – 15.00 **LUNCH**
RESTAURANT

15.00 – 16.30 **APPIA MEETING**
ROOM SESSION

16.30 – 18.45 **SOCIAL EVENT**
SOCIAL SESSION
[See more information here](#)

19.30 – 23.30 **CONFERENCE BANQUET**
RESTAURANT BEST PAPER SESSION
[See more information here](#)

OUR SCHEDULE

04 sep

05 sep

06 sep

08.30 – 09.00 REGISTRATION

HALL

Accreditation and Registration

09.00 – 10.30

ROOM SESSIONS

AIM – 01

ROOM 1

CHAIR: MANUEL SANTOS

- **Synthetic Data for Robust Identification of Typical and Atypical Serotonergic Neurons using Convolutional Neural Networks**
Daniele Corradetti, Alessandro Bernardi and Renato Corradetti
- **Profiling Atopic Dermatitis Patients Using Decision Tree Classifiers to Anticipate Dupilumab Response**
Ana Duarte and Orlando Belo
- **Modeling Temporal Dynamics in Irregular ICU Data Using MWTA-LSTM**
Mamadou Ben Hamidou Cissoko, Vincent Castelain and Nicolas Lachiche
- **Evaluating Asthma in Equines with Video Recordings**
Carolina Gomes, Paula Tilley and Luísa Coheur

AIL – 01

ROOM 2

CHAIR: PEDRO FREITAS

- **The Introduction of AI in Healthcare: a Multi-Layered Issue**
Marinella Quaranta, Ilaria Angela Amantea and Marianna Molinari
- **Segmentation Model for Judgments of the Portuguese Supreme Court of Justice**
Martim Zanatti, Ricardo Ribeiro and H. Sofia Pinto
- **Digital Justice in the EU: Integration of BPMN and AI into ODR Processes**
Marta Ribeiro, Davide Carneiro and Lurdes Mesquita
- **Transparency vs Explanation: Perspectives from Recent Legal Proceedings**
Uchenna Nnawuchi, Carlisle George and Florian Kammüller

NLP TeMA – 01

ROOM 3

CHAIR: JOAQUIM SILVA

- **Meta-prompting Optimized Retrieval-augmented Generation**
João Rodrigues and António Branco
- **Pseudo-Semantic Graphs for Generating Paraphrases**
Afonso Sousa and Henrique Lopes Cardoso
- **Compositionality and Ambiguity in Multiword Expressions: A Dataset for the Evaluation of Language Models in Galician**
Laura Castro, Alicia Temerko and Marcos Garcia
- **Bypassing the Nuances of Portuguese Covert Hate Speech through Contextual Analysis**
Gil Ramos, Fernando Batista, Ricardo Ribeiro, Pedro Fialho, Sérgio Moro, António Fonseca, Rita Guerra, Paula Carvalho, Catarina Marques and Cláudia Silva

10.30 – 11.00

HALL

COFFEE BREAK

11.00 – 12.00

ROOM SESSIONS

AIM – 02

ROOM 1

CHAIR: MANUEL SANTOS

- **Predicting Surgical Site Infections: a Time to Event Approach**
Tiago Lopes, Júlio Duarte, Tiago Guimarães, Sara Cardoso, João Miranda and Manuel Santos
- **A Study on Automatic Analysis of Handwriting Alterations due to Parkinson's Disease**
Alberto Casademunt, Alvaro Barreiro-Garrido, A. Belen Moreno, Jose F. Velez and Angel Sanchez
- **Cervical Cancer Detection in Pap Smear Images**
Pedro Didier Maranhão, Tsang Ing Ren and George Darmíton da Cunha Cavalcanti

AIL – 02

ROOM 2

CHAIR: PEDRO FREITAS

- **Detection of potentially non-compliant clauses in online ToS in Portuguese**
Matheus Tocchini, Igor M. Rocha, Raphael M. de Barros, Jéssica O. Silva, Ananda F. Garcia, Juliano S. A. Maranhão and Jaime S. Sichman
- **Towards transparent AI: how AI Act shape the future**
Nídia Andrade Moreira, Pedro Miguel Freitas and Paulo Novais
- **Anthropocentric AI for EU Consumer Lending: 'Hacking' Opacity and Discrimination 'Sins' Powered by Creditworthiness Machines**
Diogo Morgado Rebelo, Francisco Pacheco de Andrade and Paulo Novais

NLP TeMA – 02

ROOM 3

CHAIR: PABLO GAMALLO

- **Sequence Labeling for Pun Location and Detection in Portuguese**
Patrícia Gameiro, Marcio Lima Inácio, Hugo Gonçalo Oliveira and Ana Alves
- **Open Sentence Embeddings for Portuguese with the Serafim PT* encoders family**
Luís Gomes, António Branco, João Silva, João Rodrigues and Rodrigo Santos
- **WordNet expansion with bilingual word embeddings and neural machine translation**
Marta Vázquez Abuín and Marcos Garcia

AIC – 01

ROOM 4

CHAIR: PEDRO MARTINS

- **MI-CCy Quantifier: A Framework for Quantifying Mixed-Initiative Co-Creativity in Human-AI Collaborations**
Solange Margarido, Licinio Roque, Penousal Machado and Pedro Martins
- **Automated Detection System for Portuguese Musical Instruments**
Luis Augusto Silva, Héctor Sánchez San Blas, André Sales Mendes, Álvaro Lozano Murciego and Diego M. Jiménez-Bravo
- **Leveraging LLMs for On-the-fly Instruction Guided Image Editing**
Rodrigo Santos, João Silva and António Branco

12.00 – 13.00

AUDITORIUM

KEYNOTE

FRANCISCO HERRERA
EXPLAINABLE AI: A ROAD STILL TO TRAVEL

13.00 – 14.30
RESTAURANT

LUNCH

14.30 – 16.15
ROOM SESSIONS

AIM – 03

ROOM 1
CHAIR: FILIPE PORTELA

- **Automating the Clock Drawing Test with Deep Learning and Saliency Maps**
Violet Mayne, Harry Rogers, Saber Sami and Beatriz de la Iglesia
- **Acute Pancreatitis Mortality Prediction With Federated Learning**
Pedro Vieira, Eva Maia and Isabel Praça
- **Predictive Modeling for Medication Administration in Intensive Medicine: A Data-Driven Approach**
João Fontes, Tiago Guimarães, Maria Manuel Salazar, César Quintas, Júlio Duarte and Manuel Santos

AIL – 03

ROOM 2
CHAIR: PAULO NOVAIS

- **HIRS: A Hybrid information retrieval system for legislative documents**
José António Pedro Dos Santos, Ellen Souza, Carmelo J. A. Bastos Filho, Hidelberg O. Albuquerque, Douglas Vítório, Danilo Carlos Gouveia de Lucena, Nádia Silva and Andre de Carvalho
- **Protection of Copyrights in the Era of Generative Artificial Intelligence**
Roberto Novaes and Francesca Ferraz

NLP TeMA – 03

ROOM 3
CHAIR: ALÍPIO JORGE

- **A Galician-Portuguese Generative Model**
Pablo Gamallo, Pablo Rodríguez Fernández, Daniel Santos, Susana Sotelo, Nuno Miquelina, Silvia Paniagua, Daniela Schmidt, Iria de-Dios-Flores, Paulo Quaresma, Daniel Bardanca, José Ramon Pichel, Vítor Nogueira and Senén Barro
- **Assessing the Trustworthiness of Large Language Models on domain-specific questions**
Sandra Mitrovic, Jerome Guzzi, Roberto Larcher, Matteo Mazzola and Marco Piazzola

AIC – 02

ROOM 4
CHAIR: PEDRO MARTINS

- **Distributing Creative Responsibility Between a Knowledge-Based Content Determiner and a Neural Text Realizer**
Pablo Gervás and Gonzalo Mendez
 - **ScanType: Evolutionary Letter Finding**
João Cristóvão, Alexandra Oliveira, Tiago Martins, Sérgio Rebelo and Pedro Martins
 - **Mixed-initiative Worldbuilding in Speculative Design Experimental Practices.**
Alberto Calleo and Virginia Vignali
 - **Expanding Design Horizons: Evolutionary Tool for Parametric Design Exploration with Interactive and CLIP-Based Evaluation**
Ricardo Sacadura, Luís Gonçalo, Tiago Martins and Penousal Machado
 - **Evaluation of Lyrics Extraction from Folk Music Sheets Using Vision-Language Models (VLMs)**
André Sales Mendes, Álvaro Lozano-Murciego, Luis Augusto Silva, Diego M. Jiménez-Bravo, María Navarro-Cáceres and Gilberto Bernardes
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16.15 – 16.30
HALL

COFFEE BREAK

16.30 – 18.00
ROOM SESSIONS

IROBOT

ROOM 1
CHAIR: LUÍS PAULO REIS

- **AIMSM – A Mechanism to Optimize Systems with Multiple AI Models: A Case Study in Computer Vision for Autonomous Mobile Robots**
Bruno Georgevich Ferreira, Armando Jorge Sousa, Luís Paulo Reis, António Augusto Sousa, Rui Pedro Amaral Rodrigues and Rosaldo José Fernandes Rossetti
- **Defect detection in the painting of combustion device covers using the deflectometry method and YOLOv8**
João Silva, José Santos, Nuno Lau, Rodrigo Rito, Paulo Antunes, Luís Rino, Ângela Semitela, António Completo, Diogo Costa and José Oliveira

DCenAI

ROOM 2
CHAIR: MIRIAM SANTOS

- **Lag Selection for Univariate Time Series Forecasting using Deep Learning: An Empirical Study**
José Leites, Vitor Cerqueira and Carlos Soares
- **Chatbot Decision Support with Intent-Rich Structures in the Hospitality Industry**
Eduardo Machado and Rui Henriques
- **Meta TadGAN: Time Series Anomaly Detection Using TADGAN with Meta-Features**
Inês Oliveira E Silva, Carlos Soares, Vitor Cerqueira, Arlete Rodrigues and Pedro Bastardo
- **Context-aware Deep Forecasting: Principles for the Nation-wide Management of Blood Products**

ERAI

ROOM 3
CHAIR: CATARINA SILVA

- **GASTeV2: Generative Adversarial Stress Testing Networks with Gaussian Loss**
Cátia Teixeira, Inês Gomes, Luís Cunha, Carlos Soares and Jan N. van Rijn
- **A Multidimensional Taxonomy for Recent Trends in Explainable Artificial Intelligence**
Isabel Carvalho, Hugo Gonçalo Oliveira and Catarina Silva
- **Explainability of fMRI decoding models can unveil insights into neural mechanisms related to emotions**
Daniel Agostinho, Davide Borra, Miguel Castelo-Branco and Marco Simões

- **Information-Oriented and Energy-Aware Path Planning for Small Unmanned Aerial Vehicles**
José Bento, Meysam Basiri and Rodrigo Ventura
- **Pollinationbots – A swarm robotic system for tree pollination**
João Castro, Isabel Pinheiro, Miguel Marques, Pedro Moura and Filipe Santos

Miguel D. Barros, Rui Henriques and Pedro Monteiro

- **Dynamics of Fisheries in the Azores Islands: A Network Analysis Approach**
Brenda Nogueira, Ana Torres, Nuno Moniz and Gui Menezes

18.00 – 18.30
ROOM SESSIONS

CLOSING SESSION

Rita Pinheiro, (Vice-Director of the ESTG)
Pedro Castro (Local Organization)
Manuel Filipe Santos (Organization)
Goreti Marreiros (Chair of APPIA)
