SASYR Symposium of Applied Science for Young Researchers

Welcome and Registration - 10h

Open Ceremony
10:20-10:40

| Professor Doutor Carlos Rodrigues, Presidente do IPVC |
| Professora Doutora Mafalda Lopes, Diretora da ESTG/IPVC |
| Professor Doutor Jorge Garcia, Coordenador do ADiT-lab - IPVC |
| Professor Doutor José Lima, Vice-Coordenador do CeDRI - IPB |
| Professor Doutor João Vilaça, Coordenador do 2Ai – IPCA |
| Professor Doutor Constantino Martins, Coordenação do GECAD - IPP |

Session 1: Human-Centered Artificial Intelligence
10:40-11:20 | Chair: Pedro Morais, IPCA

The Impact of Educational Chatbots Supported by Large Language Models on Mathematics Learning as Virtual Mentors	*Pedro Arantes, Nuno Rodrigues and Sara Cruz*
Defining Requirements for Post-Stroke Hand Rehabilitation Devices	*Fernando Rocha and Fernando Veloso*
The Journey to Achieve a True Personalized Health Assistant	*António Faria, Patrick Murray, Pedro Morais and João Vilaça*
Collaborative Fabric Design with AI and 3D Simulation	*João Santos, Nuno Dinis, Luís Romero and Pedro Faria*

Session 2: Digital Security and Threat Modeling
11:20-12:00 | Chair: Pedro Pinto, IPP

LLM-PentestBot: A RAG-Based Assistant for Penetration Testing Tasks	*Oumaima Ben Fadhel, Rui Fernandes and Nuno Lopes*
Security Threat Modeling for Identifying Vulnerabilities in a Hate Speech Detection System Based on NLP	*Ruth Mendonça, Tiago Pedrosa, Gustavo Funchal and Frederico Barbosa*
A Review on the Use of Large Language Models in Threat Model Generation	*Ana Batista, Pedro Pinto and Nuno Pereira*
Exploiting Trust: How Artificial Intelligence and Deepfakes Shape Social Engineering Attacks	*Sérgio Tiago Gomes Serra, Kely Gonzaga and Silvestre Malta*

Session 3: Digital Architectures and Intelligent Infrastructure
12:00-12:40 | Chair: Paula Rego, IPVC

A FIWARE-Based Digital Twin Architecture for Expedite IIoT Integration: The Adalberto Textile Solutions Use Case	*Gonçalo Quesado and Sérgio Lopes*
Adoption of a FIWARE-Based Architecture to Estimate Material Consumption by Production Order Using Machine Learning	*Vítor Amorim and António Miguel Cruz*
Towards Session-Aware Kubernetes: Initial Approach for AR Telepresence	*Simão Santos and Nuno Pereira*
Initial Explorations in Industrial Video Summarization with LLMs and MLLMs	*Rui Neto, Nuno Pereira and Paula Viana*

Lunch 12:45 – 14:00

Session SASYR Posters - 14:00 – 14:30

Personalized Feedback Through a Digital Application: Supporting the Recovery of Unacquired Learning in Basic Education	*José Mário Baptista and Duarte Duque*
Bias & Accountability of Artificial Intelligence in Cancer Diagnosis	*Nelson Faria, Sofia Campelos and Vitor Carvalho*
Design and Development of a FIWARE-based Digital Twin for Predictive Maintenance in the Textile and Clothing Sector	*Tiago Lemos, Ricardo Severino and Sérgio Lopes*
Learning-Based Autonomous Handling of Multi-Articulated Conveyor Trolleys	*Joaquin Dillen, João L. Vilaça, João Borges, John Cosgrove and Antonio Moreira*
Development process of a wearable device for monitoring elderly people with dementia: State of development	*Marcelo Arantes, Mariana Carvalho, Inês Coroas da Rocha,Ana Rita Freitas, José Soares, Marta Pinto, Pedro Morais,Demétrio Matos and Vítor Carvalho*
Development of a Modular In-ear Wearable Device for Dementia Monitoring: A Preliminary Approach	*Ana Rita Freitas, José Soares, Inês Rocha, Mariana Carvalho, Marcelo Arantes, Marta Pinto, Pedro Morais, Demétrio Matos and Vítor Carvalho*
Deep Learning Methods for Left Atrial Appendage Segmentation in 3D TEE Images - A Comparative Study	*Luís C. N. Barbosa, Siobhán Moane, João L. Vilaça and Pedro Morais*
Autonomous Cyber Defense Agents	*Safa Ouerchfani, Rui Fernandes and Nuno Lopes*
Cross domain I2I translation for improved Surgical Action Detection	*Nuno Rodrigues, Helena Torres, Pedro Morais, Estevão Lima and João L. Vilaça*

Thermal Monitoring of Aluminum Forging for Process Optimization	*Joaquin Dillen, Luis Vilas Boas, Nuno Simões, João Faria, Rafael Fernandes, Bruno Silva, Inês Caetano, João Borges and Antonio Moreira*
Assembly worker Digital Twin for workspace optimization	*Ricardo Rodrigues, Jaime Fonseca and Antonio Moreira*
Imitation Learning for Adaptive Grasping and Precise Placement of Unstructured Metal Parts: A Case of Study	*Nuno Simões, Rafael Fernandes, Bruno Silva, Joaquin Dillen, João Faria, Luis Vilas-Boas, Ines Caetano, Luis Cardoso, Paulo Silva, João Borges and António Moreira*
Trocar-Point for robotic surgery	*Sérgio Pereira, Pedro Morais, Estevão Lima and João L.Vilaça*
Robotic-Assisted 3D Scanning for Assesing the Arragement of Goods on Pallets in Logistics Warehouse	*Rafael Fernandes, Bruno Silva, Nuno Simões, Joaquim Dillen, João Faria, Luis Vilas Boas, Ines Caetano, Luis Cardoso, Paula Silva, João Borges and António Moreira*
Design and Construction of an Ultrasound-Compatible Kidney Phantom with Dynamic Breathing Simulation	*Simão Valente, Nuno Rodrigues, Pedro Morais, Estevão Lima and João L. Vilaça*
Imitation Learning Strategy for enhanced pick and place handling of flexible/rigid objects	*Bruno Silva, Rafael Fernandes, Nuno Simões, Joaquin Dillen,João Faria, Luis Vilas-Boas, Inês Caetano, Luis Cardoso,Paulo Silva, João Borges and António Moreira*
Enhanced Bladder and Prostate Segmentation in CT via Hybrid Contour-Distance Loss	*Raul Ribeiro, Pedro Morais and João L. Vilaça*
Intelligent Virtual Assistante for Industry 5.0	*André Costa, Pedro Faria, Luis Romero and Nuno Dinis*
Acoustic Voice Analysis: Building a Reference Database for Clinical Applications	*Ana Machado, Joana Fernandes and João Teixeira*
Session 4: Industrial Analytics and Intelligent Systems **14:30 – 15:10 | Chair: João Mendes, IPB**	
Web-Based Interactive Dashboard with Machine Learning for Industrial Predictive Maintenance	*João Vieira, Luis Vilas Boas and António Herculano Jesus Moreira*
System for Detecting Rubber Imperfections in Extrusion Lines	*Paulo Sousa, Pedro Carneiro and José Henrique Brito*
Increasing Warehouse Efficiency Using Quality Tools in Factory Operations	*Zied Ben Cheikh, Artur Rossi, José Barbosa and Paulo Leitão*
Python-Based Tool for Data Cleaning and Validation	*Benazir Rostami, Inês Sena and Ana I. Pereira*
Session 5: Sustainability, Regulation, and Energy Systems **15:10 – 15:50 | Chair: Carlos Abreu, IPVC**	
Exploratory Data Analysis and Insights on Volatile Organic Compounds for Hazardous Waste Detection	*Mahdia Ahmadi, Natalia Méndez Pérez, Helena Cristina Almeida da Cruz, Getúlio Igrejas, Pedro João Rodrigues and Rui Pedro Lopes*
A Review of the Regulations Related to Digital Forensics of Mobile Devices	*Carla Abreu Teixeira, Patrícia Anjos Azevedo and Pedro Pinto*
Assessing the Implementation of the EU 5G Toolbox Recommendations: A Pan-European Study on Cybersecurity Measures in 5G Networks	*Diego Santos Alvarez, Silvestre Malta and Pedro Pinto*
Performance Comparison of Torque Characteristics in Self-Excited Induction Generators for Three-Phase and Single-Phase Operation	*Bruno Romeiro, Francisco Filho, Carlos Oliveira, Cicero Hildenberg and Ângela Ferreira*
Session SASYR Posters/Coffee Break - 16:00 – 16:30	
Development of a Scalable Digital Sample Archive for the Textile Sector	*Válter Gomes, Luís Romero and Pedro Faria*
Purchase Behavior at Starbucks in Malaysia	*Cristiana Silva, Alison Gonçalves, Inês Fernandes, Helena Sofia Rodrigues and Elizabeth Fernandes*
YOLO-Based CNN model for Detecting Olive Knot Disease from UAV images	*Maurício Morais, João Mendes, José Lima and Murillo dos Santos*
Surface Classification to Optimize Path Planning in Autonomous Mobile Robots	*João M. Faria, João Borges, Luis Cardoso, John Cosgrove and António H. J. Moreira*
Intelligent Agent to enable Effectiveness in Industry 5.0	*Eduardo Gonçalves, Luis Ferreira and Eduardo Gonçalves*
Textile Pattern Design - Creative Platform	*Diogo Araújo, Luís Romero and Pedro Faria*
Analysis of Liver Patients with Machine Learning	*Guilherme Rodrigues, Gabriel A. Leite, Beatriz Flamia Azevedo and Ana I. Pereira*
Implementation of an Asset Administration Shell Type 3 in an Automotive Assembly Line	*José Costa, Lucas Sakurada and Paulo Leitão*
Development of a 2-DoF Antenna Radiation Measurement System	*Mauro da Silva Leme, João Alexandre Batista Coelho and João Paulo Coelho*
Flex ICT – Flexible and intelligent robotic platform for laboratory ICT	*Márcio Gama, Emanuel Lomba and Sérgio Lopes*
Economic Freedom in the European Union: insights from the 2021 Index	*Ana Maria Silva, Ana Figueiredo, Ana Barbosa, Sofia Rodrigues and Elisabeth Fernandes*
Application of Artificial Intelligence in Coffee Cultivation: Automated Diagnosis of Diseases and Nutritional Deficiencies Using Computer Vision	*Gabriel Baptista, João Mendes, Eduardo Damasceno, José Lima and Ana Pereira*

VOC Pattern Recognition in Waste Using AI-Enabled BME688 Sensors	*Felipe Izidorio, Mariam Jvarsheishvili, Getúlio Igrejas, Pedro Rodrigues and Rui Lopes*
Deep Dive into Data Poisoning: Proposal and Methodology	*Hugo Costa, Silvestre Malta and Ricardo Santos*
An Artificial Intelligence Method for Large Forest Areas Analysis	*Raphael D. Britto, João Mendes, Murillo Ferreira dos Santos, João P. Castro, José Lima and Ana I. Pereira*
Preliminary anatomical studies on the reliability of electromyography signal collection methods	*Caio Oliveira, Luiz Eduardo Luiz and João Paulo Teixeira*
Hybrid Heuristic-Metaheuristic Strategies for Solving CVRPTW with OR-Tools	*Arthur Brocco, Adriano Silva, Ana Pereia and Florbela Fernandes*
Tchumy: Assistive Wearable Medical Technology for Children with Autism	*Mariam Jvarsheishvili, Ahmed Gamal Ibrahim and Rui Pedro Lopes*
Grapevine Health Diagnosis with Deep Learning	*Vinícius Sasaki, João Mendes, Ana I. Pereira and José Lima*

Awards and Closing Ceremony 16:30 – 17:00 | Chairs: Florbela Fernandes, Helena Torres, Pedro Pinto, Silvestre Malta