

# FAIR Spoke Workshop 2025

April 3-4, 2025

Catania

Università di Catania

Villa Cerami

Auditorium ex Chiesa della Purità



Bio-socio-cognitive AI



# 2nd Year Workshop

03, April 2025

14.00 – 14.15 **Opening**

## 14.15 – 16.00 **SESSION 1**

### **WP 10.1: Neuro-inspired lifelong learning**

- **Quaternion Neural Networks: from optimized learning algorithms to models of complex systems**  
(A. Buscarino, C. Famoso, UNICT)
- **Brain-state specific apical mechanism and plastic spiking models of incremental learning and sleep**  
(P. S. Paolucci, INFN)
- **Learning geometrical properties of complex biological networks**  
(G. Mangioni, S. Romano, UNICT)
- **Emulating human cognitive and generative processes for improved lifelong learning**  
(G. Bellitto, S. Calcagno, M. Pennisi, C. Spampinato, UNICT)

### **WP 10.6: Embodied AI for Action and Perception**

- **Neuromorphic Technologies for Embodied AI**  
(C. Bartolozzi, IIT)
- **Autonomous and tactile-based perception and manipulation for robotics and prosthetics in unknown scenarios**  
(L. Natale, G. Pasquale, F. Ceola, G. Caddeo, IIT)
- **Use AI for robust locomotion control and perception**  
(G. Fischer Abati, IIT)

16.00 – 16.30 **Coffee Break**

## 16.30 – 19.00 **SESSION 2**

### **WP10.6: Embodied AI for Action and Perception**

- **DEXTER: Diffusion-Guided EXplanations with TExtual Reasoning for Vision Models**  
(S. Carnemolla, D. Giordano, S. Palazzo, UNICT)
- **Towards a Vision-Action model for Outdoor Robot Navigation**  
(D. Guastella, G. Muscato, G. Suter, UNICT)
- **Bio-inspired algorithms employing neural structures for robot locomotion and perception**  
(P. Arena, UNICT)

### **WP 10.3: Egocentric Perception and 3D Vision**

- **Toward Wearable Artificial Assistants Powered by Egocentric Perception**  
(G.M. Farinella, UNICT)
- **Maps from Motion (MfM): Generating 2D Semantic Maps from Sparse Multi-view Images**  
(P. Morerio, M. Toso, IIT)

### **WP 10.4: Machine Learning for Physical Sciences**

- **Transfer learning for atomistic simulations via random features**  
(M. Parrinello, L. Bonati, T. Devergne, IIT)
- **Artificial Intelligence-Guided Synthesis of 2D Materials**  
(A. Coriolano, IIT)

### **WP 10.5: Optimization and Robustness in Machine Learning**

- **Operator-based approaches for reinforcement learning and dynamical systems**  
(M. Pontil, P. Novelli, F. Vigliotti, IIT)

### **TRANSVERSAL TALK**

- **AI and criminal causation**  
(E. Bivona, F. La Vattata, M. Maugeri, U. Salanitro, UNICT)



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04, April 2025

**09.00 – 10.30 SESSION 3**

**WP 10.7: Grounded world models and hybrid reasoning**

- Logic-Augmented Generation and Tacit Knowledge Extraction (A. Gangemi, CNR)
- Grounded world models for interoceptive actions (M. Russo, CNR)
- Automatic Planning & Learning Methods for Human-Robot Interaction (A. Oddi, CNR)

**WP 10.2: Multisensory learning and cross modal integration**

- Artificial Intelligence for Multimodal Application: Innovations in Social Media, Biodiversity, and Healthcare Logistics (S. Battiato, G. Fargetta, UNICT)
- Securing Multimodal Twin Networks for Securing Voice-Controllable Devices: Threats and Mitigations (G. Bella, S. Esposito, UNICT)
- Inference for mixture of non-normalized statistical models (S. Ingrassia, L. Scaffidi, UNICT)

**10.30 – 11.00 Coffee Break**

**11.00 – 13.00 SESSION 4**

**CASCADE CALLS FOR BASIC RESEARCH ACTIVITIES**

- CAESAR | (A. Chella, UNIPA)
- FAIRGROUND | (D. Bruneo, UNIME)
- GROUNDEEP | (A. Testolin, UNIPD)
- ANSWER | (A. Giuliani, UNICA)

**INNOVATION GRANT**

- Improving Continual Learning | ICL (M. Russo, LEONARDO)

**CASCADE CALLS FOR COMPANIES**

- ALLGAD | (L. Prezzavento, F. Rigano, LONGVISION)
- PHYCOMOX | (M. Neri, BIORETICS)
- TAN-IA | (A. Lavelli, L. Bisi, KAYRHOS)



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