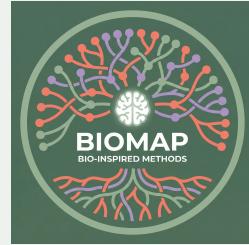


# BIOMAP 2026

BIO-inspired Methods for Pattern Recognition

Lyon, France - 22 August 2026



## Motivation & Rationale

Pattern recognition systems in nature show strong abilities through evolutionary adaptation and self-organisation, from the visual cortex's layered feature learning to the group behaviour of swarm organisms.

This workshop sets bio-inspired intelligence as a core approach for future pattern recognition systems, gathering views from evolutionary computation, swarm intelligence, artificial life, and neuromorphic computing. It covers a wide range of bio-inspired methods and their combined use. The workshop examines the key questions where biology and computation intersect: How can evolutionary ideas aid in the automatic discovery of pattern recognition structures? What does swarm intelligence show about shared visual processing? How do self-organising ideas allow strong pattern recognition in changing settings? It aims to start new ideas that cross standard field limits.

The workshop links to real-world problems in pattern recognition. For systems operating in unknown settings where trained models are ineffective, evolutionary adaptation and self-organisation provide avenues for learning and adjustment as they run. In medical imaging, where marked data is rare, bio-inspired methods allow learning from a few examples. For IoT applications, swarm intelligence provides scalable solutions. The workshop will demonstrate how these methods address accuracy, efficiency, robustness, and adaptability simultaneously.

The workshop also ties to themes of sustainable and trustworthy AI. Biological systems achieve high efficiency through evolution, providing insights for energy-efficient recognition. By establishing bio-inspired intelligence as a unified framework, this workshop will accelerate the development of robust, adaptive, efficient, transparent, and human-aligned pattern recognition systems.

## Important Dates

**Paper Submission**  
**May 1, 2026**

**Notification**  
June 10, 2026

**Camera-Ready**  
June 18, 2026

## Workshop Topics

- Evolutionary neural architecture discovery
- Swarm intelligence for distributed patterns
- Self-organising and adaptive vision
- Artificial life and emergent patterns
- Evolutionary multi-objective optimisation
- Bio-inspired learning paradigms
- Hybrid evolutionary-gradient methods
- Neuromorphic evolutionary systems

- Collective intelligence for large-scale analysis
- Dynamic and online evolutionary adaptation
- Evolutionary robotics and embodied vision
- Quantum-inspired evolutionary recognition
- Evolutionary explainability
- Bio-inspired hardware-co-evolution
- Applications (medical, remote sensing, etc.)

## Workshop Chairs

**Francesco Fontanella**  
University of Cassino  
and Southern Lazio

**Emanuele Nardone**  
University of Cassino  
and Southern Lazio

**Leonardo Vanneschi**  
NOVA IMS,  
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