

## Template for thematic workshop proposals

(max 2 pages in A4 format in English language (PDF))

### 1. Workshop Title:

Intelligent Robot Sensing and Perception using Visual and Computational Intelligence Innovative Approaches

### 2. Organizers (Provide names, affiliations, emails. Indicate corresponding organizer(s)).

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– [vito.reno@cnr.it](mailto:vito.reno@cnr.it) (corresponding organizer)

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### 3. Workshop Format (E.g., invitation-only or open for submissions.):

Invitation-only

### 4. Workshop Objectives and Main Topics (Clearly state the motivation, goals, and topics to be covered)

Nowadays, perception technologies and intelligent systems are widespread and applied to multiple environments and domains, ranging from industrial settings (e.g., railways, aeronautics, smart logistics, constructions) to smart agriculture, smart healthcare, and many others.

However, when it comes to evaluating sensing and perception techniques in scenarios that involve the presence of one or more robots, signals must be properly processed to tackle open problems and find suitable operating solutions, either to meet real-time requirements or not. Advanced perception technologies today include (to name a few) multiple sensing devices such as 2D cameras, 3D ones based on different working principles, or multi/hyperspectral cameras, and many more. The clever use of such multimodal data sources in robotics applications is crucial to drive innovations.

In scenarios where intelligent parameters monitoring or high-level evaluation of complex scenes or events can act as decision-making processes for robotics, the role of intelligent systems gains importance, either using traditional AI and data processing techniques or more modern approaches like deep learning based ones.

The main purpose of this workshop is to encourage discussion and exchange on best practices as well as open challenges in innovative robotics applications with experts from academia, industry, and research institutions. Particular emphasis will be given to driving the discussion on real use-cases that are known for being challenging testbeds for well-known problems in literature, which usually require further studies for the application of smart approaches and cutting-edge solutions.

### 5. Keywords

Robot perception; Computer vision; Intelligent Sensing

### 6. Preferred Date (please indicate your preferred date for the workshop - either 17 October or 18 October. The organizers will try to accommodate your preference.)

17 October

### 7. List of Speakers (Include names, affiliations, and indicate if each speaker is confirmed or to be confirmed.)

Dr. David Caballero Flores, CDEI-UPC, Centre de Disseny d'Equips Industrials Universitat Politècnica de Catalunya, Barcelona, Spain – Confirmed

Dr. Francesco Ferro, PAL Robotics, Barcelona, Spain – Confirmed

Dr. Antonio Petitti, CNR STIIMA, Institute of Intelligent Industrial Technologies and Systems for Advanced Manufacturing, Bari, Italy – TBC

**8. Expected Number of Attendees:**

15 people

**9. Target Audience (E.g., sector experts, general public.):**

Sector experts, researchers, PhD students

**10. Workshop Outcomes (E.g., publications, videos, special issues, future events.):**

Knowledge sharing, best practices sharing, special issues and future events

**11. Plan for Special Issue or Session (Describe your plan to organize a special issue or session after the conference. Priority will be given to workshop proposals that include a clear plan to organize a special issue in the months after the conference in a venue relevant to the I-RIM community and focused on the workshop topic.):**

Depending on the number of extended abstracts that will fit the workshop scope and also based on the effective audience, we will evaluate whether to propose a journal special issue or a special session in future conferences.

**12. Call for Extended Abstracts (Optional but Encouraged) (State whether you plan to issue a call and how it will be managed.):**

Even if the workshop format is invitation only, we plan to promote extended abstracts submissions directly to IRIM 2025. Contributions fitting the workshop scope will be discussed in the poster session (if any).

**13. Workshop Webpage (Provide the link or planned location. This will be linked in the I-RIM program.):**

TBD in case of acceptance

**14. Notes on Registration (Indicate how you plan to use the 2 free one-day registrations and manage additional speaker registrations.):**

We plan to use the 2 free registrations to cover at least 2/3 of the invited speakers' fees.