TrustRobotics Challenge:
Safe & Secure Robotic Systems in Action

Chair: Ionela Prodan

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The TrustRobotics Challenge of CSAW'25 Europe (https://esisar.grenoble-inp.fr/en/research/csaw) is a competition dedicated to highlight the most innovative and impactful research in the field of safe and secure robotics. This unique initiative invites Master, PhD students and postdocs researchers from academia and industrial R&D labs across Europe to present their work, with a strong emphasis on demonstrable safety, resilience and trust in robotic systems.

Why Participate?

Unlike traditional paper-centric events, the **TrustRobotics Challenge at CSAW'25 Europe** bridges the gap between theoretical research and practical validation. Finalists will not only present their work, but also demonstrate their solutions in realistic simulation or experimental settings. Demonstrations may include, but are not limited to, ROS-based frameworks, custom simulators and can also involve integration with our motion capture testbed. Whether your research is already published or currently under review, what matters most is its technical soundness, practical relevance and demonstrability in a safety and security robotics context.

Scope and Themes

Submissions should address one or more of the following domains:

Robotic safety:
- Collision avoidance in aerial, ground, or underwater drones
- Safe navigation in uncertain environments
- Real-time safety monitoring and intervention

Robotic security:
- Secure multi-robot communication and coordination
- Defence against cyber-physical attacks (spoofing, jamming, injection)
- Resilient control architectures (reconfiguration against faults or attacks)

Hybrid approaches:
- Safety-security trade-offs and co-design
- Security on Robot Operating System (ROS)
- Verification, runtime assurance or anomaly detection in robotic squads

We particularly value realistic implementations: Software-in-the-Loop (SIL), Hardware-in-the-Loop (HIL) and real-world tests are highly encouraged and will be central to finalist evaluation.

Who Should Apply?

- Master and PhD students, Postdoctoral researchers working on safety/security in robotics
- Previous publication of the work is allowed (and even encouraged), as long as you can provide a demonstration or analysis
- Students authors are available to present the paper in person during CSAW'25 Europe Finals in Valence, France

Competition Format

1. Submission Phase: A maximum 3 pages extended abstract, including overview, contribution and demo description. This should be based on a recent publication. The extended abstract must clearly reference the original work(s).
2. Selection: Top 6 submissions invited to present
3. Final Event:
   - Oral presentation
   - Poster exhibition
   - Live or recorded demonstration on our localisation and motion planning platform or compatible experimental hardware

A dedicated session will be organized to allow in-depth technical discussion and networking with leading experts.
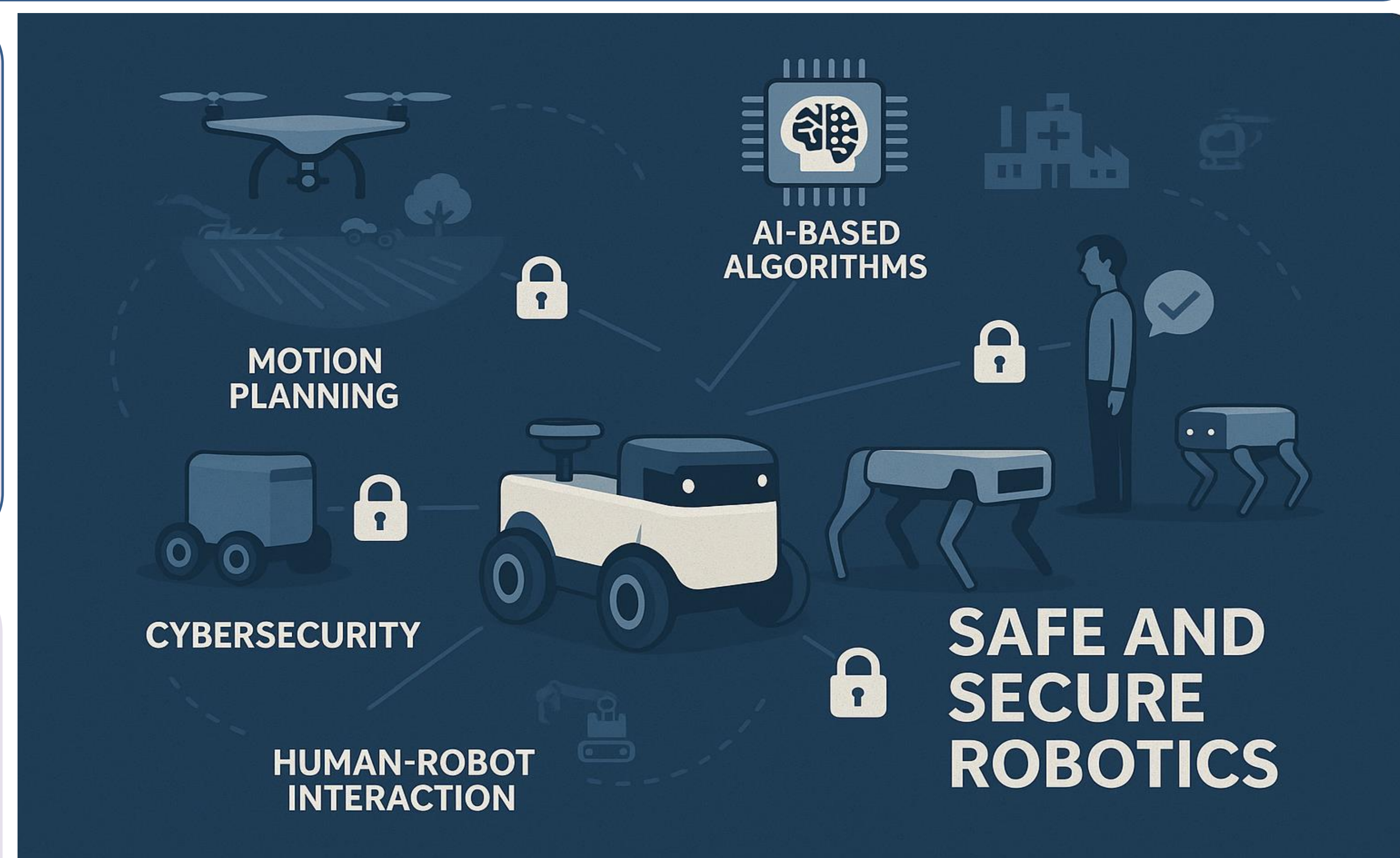
Evaluation Criteria

- Technical soundness and originality
- Relevance to safety/security in robotics
- Demonstration quality (ROS/Gazebo simulation or real-world)
- Clarity and reproducibility

Recognition

- Six finalist teams will be invited to present their work at **CSAW'25 Europe**, hosted at Grenoble INP - Esisar in Valence, France, on November 13-14, 2025.
- All finalists will receive official certificates and be featured in the **CSAW'25 Europe** communications and promotional materials.
- Each selected team will send one student author to attend the event in person, present the research and demonstrate the solution (simulation or experimental). More details about the format will be sent to the finalists.
- Travel expenses for the attending student of each team (transportation, accommodation) can be covered by the **CSAW'25 Europe** organization.
- During the event, the finalists will present their work to an audience and a jury panel which will evaluate the presentations and demonstrations.
- At the end of the competition, the jury will select the top three winning contributions, which will receive official recognition and awards.
- The winners will receive the following prizes:
  1st Prize: €700, 2nd Prize: €500, 3rd Prize: €300

Platform Support

- Participants will be provided with technical details about LCIS-Grenoble INP simulation and hardware platform (ROS/Gazebo-based, Qualisys motion capture system, terrestrial and aerial robots)
- If the participants hardware is compatible, physical tests can also be arranged
- For more information find here the contact: https://lcis.fr/members/ionela-prodan

Jury: Submissions will be evaluated by a panel of experts from both academia and industry, selected for their expertise in robotics, safety-critical systems, cybersecurity and autonomous systems. The full list of jury members will be announced soon.