



# 8<sup>th</sup> ICAPS Workshop on Planning and Robotics

## **PlanRob 2020**

<https://icaps20.icaps-conference.org/workshops/planrob/>

**Chairs**

**Alberto Finzi, Michael Cashmore, AndreA Orlandini**

# PlanRob WS: A Twofold Goal



- Provide a ***fresh impulse for the ICAPS community*** to recast its interests towards robotics
- ***Attract representatives from the Robotics community*** to discuss challenges related to planning and expectations from P&S community

# PlanRob Long-term Goal



- Constitute a ***stable, long-term establishment of a forum*** on the interactions between Robotics and P&S communities
- Present ***a stimulating environment to discuss*** about the opportunities and challenges for P&S when applied in Robotics

# PlanRob Timeline



8 editions

History:

<http://pst.istc.cnr.it/planrob>

From 2014 connected with RobTrack

Next Year ICAPS21@RobTrack

<https://icaps21.icaps-conference.org/Calls/robotics-track.html>

# Program Committee



**Roman Barták**  
**Arthur Bit-Monnot**  
**Ronen Brafman**  
**Jonathan Cacace**  
**Riccardo Caccavale**  
**Amedeo Cesta**  
**Riccardo De Benedictis**  
**Nick Hawes**  
**Felix Ingrand**  
**Luca Iocchi**

**Erez Karpas**  
**Matteo Leonetti**  
**Oscar Lima**  
**Masoumeh Mansouri**  
**Tim Niemuller**  
**Ron Petrick**  
**Enrico Scala**  
**Elisa Tosello**  
**Alessandro Umbrico**

Special Thanks to Additional Reviewers:  
**Jane Jean Kiam, Gabriele Sartor**

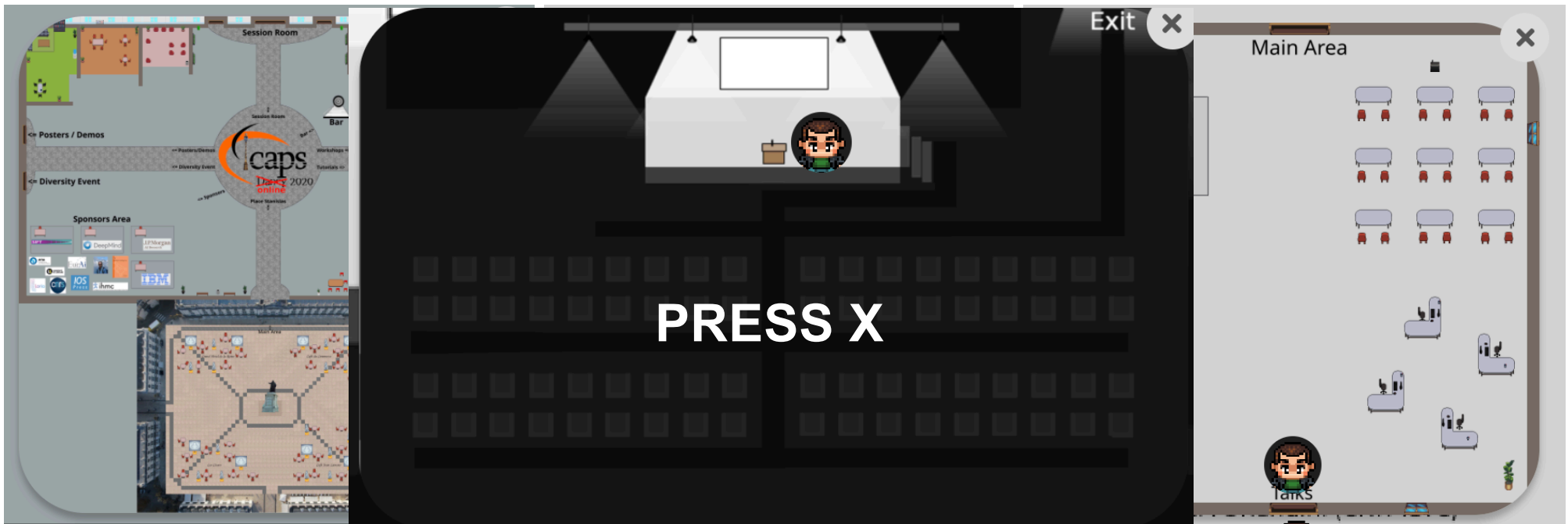
# Virtual PlanRob Event



- Covid forces us to go for a virtual event

- Virtual conference center:

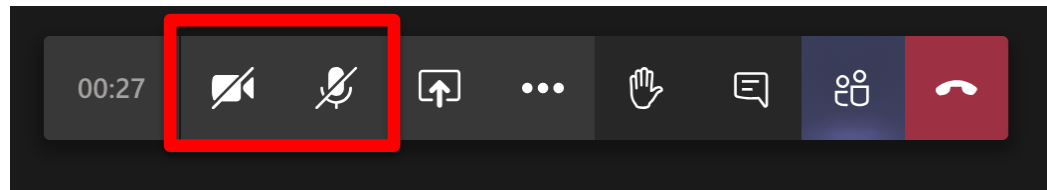
<https://gather.town/app/Z1SdmgDu1rDoaMID/ICAPS2020>



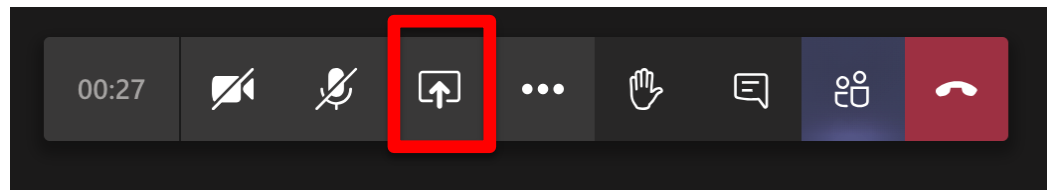
# MS Teams videoconf



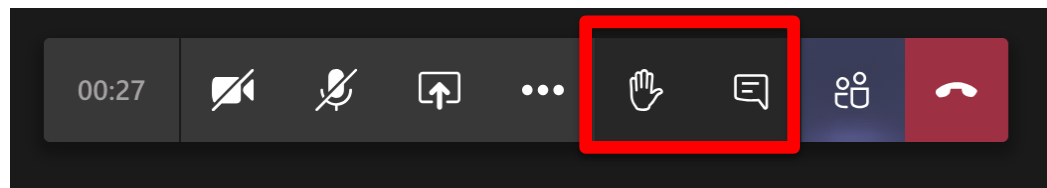
- Please, stop video and mute your mics



- Speakers, share your screen



- Questions
  - on Chat or “raise your hand”



# Program 22 Oct. (1/4)



- **12:15-13:20 Rachid Alami – “Planning and Controlling Human-Robot Joint Activities”**
- **Session “Robots in Logistics”**
  - 13:20-13:40 Fabian Maas Genannt Bermpohl and Andreas Bresser.  
[Towards Autonomous Intralogistics: A Testbed Environment for the Coordination of a Robotic Fleet](#)
  - 13:40-14:00 Marco De Bortoli and Gerald Steinbauer.  
[The RoboCup Logistics League from a Planning Perspective](#)
- **14:00-14:30 Break**
- **Session “Robots in Extreme Environments (1/2)”**
  - 14:30-14:50 Robert Morris, Emma Zemler, Shaun Azimi, Kevin Chang and Jeremy Frank.  
[Integrating Task Planning with Robust Execution for Autonomous Robotic Manipulation in Space](#)
  - 14:50-15:10 Daniel Wang, Joseph A. Russino, Connor Basich and Steve A. Chien.  
[Using Flexible Execution, Replanning, and Model Parameter Updates to Address Environmental Uncertainty for a Planetary Lander](#)
  - 15:10-15:30 Filip Klaesson, Petter Nilsson, Tiago Stegun Vaquero, Scott Tepsuporn, Aaron D. Ames and Richard M. Murray.  
[Planning and Optimization for Multi-Robot Planetary Cave Exploration under Intermittent Connectivity Constraints](#)
  - 15:30-15:50 Sarah Bhaskaran, Jagriti Agrawal, Steve Chien and Wayne Chi.  
[Using a Model of Scheduler Runtime to Improve the Effectiveness of Scheduling Embedded in Execution](#)
- **15:50-16:20 Break**



# Program 22 Oct. (2/4)



- **Session “Task, Path and Motion Planning (1/2)”**

16:20-16:40 Valentin Noah Hartmann, Ozgur Oguz and Marc Toussaint.

[Planning Planning: The Path Planner as a Finite State Machine](#)

16:40-17:00 Or Wertheim, Ronen I. Brafman, Shashank Shekhar, Tal Feiner and Igal Pinsky.

[ROS-POMDP – A Platform for Robotics Planning using PLPs and RDDDL in ROS](#)

- **Session “Human-Robot Interaction”**

7:00-17:20 Stefan-Octavian Bezrucav and Burkhard Corves.

[Improved AI Planning for Cooperating Teams of Humans and Robots](#)

17:20-17:40 Tianyi Gu, Momotaz Begum, Naiqian Zhang, Dongpeng Xu, Sajay Arthanat and Dain LaRoche.

[Adaptive Software Framework for Dementia-care Robot](#)

# Program 23 Oct. (3/4)



- **Session “Robot Planning with uncertainty”**  
12:00-12:20 Marcus Hoerger, Hanna Kurniawati and Alberto Elfes.  
[A Software Framework for Planning under Partial Observability](#)  
12:20-12:40 Jan Vermaelen, Hoang Tung Dinh and Tom Holvoet.  
[A Survey on Probabilistic Planning and Temporal Scheduling with Safety Guarantees](#)  
12:40-13:00 Alexander Kovalchuk and Ronen Brafman.  
[Verifying Plans and Scripts for Robotics Tasks Using Performance Level Profiles](#)  
13:00-13:20 Kaiyu Zheng and Stefanie Tellex.  
[pomdp\\_py: A Framework to Build and Solve POMDP Problems](#)
- **13:20-14:00 Break**
- **Session “Robots in Extreme environments (2/2)”**  
14:00-14:20 Andrew Branch, James Mason and Steve Chien.  
[Golden Section Search for Single Beacon Homing](#)  
14:20-14:40 James Mason, Andrew Branch, Guangyu Xu, Michael Jakuba, Christopher German, Steve Chien, Andrew Bowen, Kevin Hand and Jeffrey Seewald.  
[Evaluation of AUV Search Strategies for the Localization of Hydrothermal Venting](#)

# Program 23 Oct. (4/4)



- **Session “Task, Path and Motion Planning (2/2)”**  
14:40-15:00 Balazs Nemeth and Andras Kovacs.  
[Robot Path Planning over a Sequence of Points Specified in Task Space](#)  
15:00-15:20 Nicolò Botteghi, Khaled Mustafa, Beril Sirmacek and Mannes Poel.  
[Entropy-Based Exploration for Mobile Robot Navigation: A Learning-Based Approach](#)  
15:20-15:40 Sarah Keren, Michael Cashmore, Gerard Canal and Daniele Magazzeni.  
[Task-Aware Waypoint Sampling for Planning Robots](#)  
15:40-16:00 Bhargav Adabala and Zlatan Ajanovic.  
[A Multi-Heuristic Search-based Motion Planning for Autonomous Parking](#)
- **16:00-16:20 Workshop Conclusion**

# Keynote



- **Rachid Alami LAAS-CNRS**

## “Planning and Controlling Human-Robot Joint Activities”

- Senior Scientist at LAAS-CNRS. He received an engineer diploma in computer science in 1978 from ENSEEIHT, a Ph.D in Robotics in 1983 from Institut National Polytechnique and an Habilitation HDR in 1996 from Paul Sabatier University. He contributed and took important responsibilities in several national, European and international research and/or collaborative projects (EUREKA: FAMOS, AMR and I-ARES projects, ESPRIT: MARTHA, PROMotion, ECLA, IST: COMETS, IST FP6 projects: COGNIRON, URUS, PHRIENDS, and FP7 projects: CHRIS, SAPHARI, ARCAS, SPENCER, H2020: MuMMER, France: ARA, VAP-RISP for planetary rovers, PROMIP, several ANR projects). His main research contributions fall in the fields of Robot Decisional and Control Architectures, Task and motion planning, multi-robot cooperation, and human-robot interaction. Currently the head of the Robotics and InteractionS group at LAAS. He has been offered in 2019 the Academic Chair on Cognitive and Interactive Robotics at the Artificial and Natural Intelligence Toulouse Institute (ANITI).



**ENJOY PLANROB 2020!!!**