EMRA'17
Workshop on EU-funded
MARINE ROBOTICS AND APPLICATIONS

GIRONA, Spain
MAY 15-16, 2017

Hosted by:

Universitat de Girona
Institut de Recerca en Visió per Computador i Robòtica VICOROB

UNDERWATER VISION
AND ROBOTICS LAB

Organized within the framework of:

EXCELLABUST

STRONG
MAR

With the support of:

OES   **IEEE Oceanic
Engineering Society**

Funded by the European Commission under the H2020 EU
Framework Programme for Research and Innovation
(H2020-TWINN-2015 691980) and (H2020-TWINN-2015 692427)

ORGANIZING COMMITTEE

Marc Carreras
University of Girona

Nikola Miskovic
University of Zagreb

Eduardo Silva
INESC TEC and ISEP

www.marinerobotics.eu

WELCOME

Welcome to the 4th EU funded Marine Robotics and Applications Workshop (EMRA '17)!

Following successful events hosted by CNR (Rome 2014), IST (Lisbon 2015) and Newcastle University (Newcastle 2016), the University of Girona will host the next workshop on marine robotics and applications on May 15th and 16th, 2017. The main goal of this workshop is to summarize current EU FP7 and H2020 projects on marine robotics and to provide a platform for marine stakeholders to share and discuss current technological challenges and achievements. It is an interdisciplinary event, providing an excellent opportunity for networking and cross-fertilisation of ideas in marine robotics, enabling technologies and applications. This edition of EMRA is organised and supported by two EU funded twinning actions: EXCELLABUST and STRONGMAR. The workshop will be held in the city of Girona, which offers a great combination of culture, gastronomy and sightseeing, especially during these days that coincide with the Girona Flower Festival.

The workshop will have two invited talks given by leading entities in marine robotics and twenty presentations related to the activities done in research projects, companies and research institutions. The meeting will be held in the facilities of the Science and Technological Park of the University of Girona, which provides an excellent environment for presentations and networking.

I would like to thank all participants of the workshop for their interest and collaboration. I hope you enjoy and find fruitful the meeting and you have a pleasant time in Girona. I would like to thank also the organizing committee from University of Girona, and EXCELLABUST and STRONGMAR teams for their support and effort in the organization of this successful event.

Yours sincerely,

Marc Carreras
EMRA'17 Organizing Committee Chair

WORKSHOP INFORMATION
RESEARCH PROJECTS

www.strongmar.eu

www.excellabust.fer.hr

www.eu-robotics.net

www.wimust.eu

www. caddy-fp7.eu

www.robocademy.eu

www.fp7-sunrise.eu

www.subcultron.eu

www.dexrov.eu

www.irs.uji.es/merbots

www.upct.es/urready4os

www.vamos-project.eu

www.eu-robust.eu

www.swarms.eu

www.graal.dibris.unige.it

www.mmrrc.ul.ie

www.morph-project.eu

www.bridges-h2020.eu

WORKSHOP PROGRAMME

15th MAY 2017, Monday

8:30	**REGISTRATION OPEN - Good morning coffee**
9:00	**WELCOME** Pere Ridao / Marc Carreras / Quim Salvi, University of Girona
9:15	**KEYNOTE SPEAKER 1 - IFREMER Developed Hybrid ROV/AUV Ariane** Lorenzo Brignone, IFREMER
10:00	**DexROV: dexterous ROV interventions operated from an onshore control center** Jeremi Gancet, Space Applications Services NV/SA
10:20	**SWARMs: Smart and Networking UnderWAter Robots in Cooperation Meshes** José-Fernán Martinez, Universidad Politécnica de Madrid
10:40	**COFFEE BREAK**
11:10	**BRIDGES: Bringing together Research and Industry for the Development of Glider Environmental Services** Laurent Mortier, ENTSA Paris Tech
11:30	**TECH TRANSFER EXPERIENCE: From ICTINEU3 manned submersible to underwater robotics market** Carme Paradeda, ICTINEU SUBMARINS
11:50	**SOCIB-GF: Introducing SOCIB's Glider Facility and its Open-Access Program** Marc Torner, SOCIB Glider Engineer
12:10	**ROBUST: Robotic subsea exploration technologies** Graham Eduards, The Welding Institute Ltd
12:30	**MARIS: Marine Autonomous Robotics for InterventionS** Pino Casalino, University of Genova (ISME)
12:50	**LUNCH BREAK**
14:00	**The MEDUSA Deep Sea and FUSION AUVs: When research and business get together** Bruno Cardeira, Instituto Superior Técnico (Lisbon)
14:20	**SUNRISE and EASME Archeosub: Building the Internet of Underwater Things** Chiara Petroli, University of La Sapienza (Rome)
14:40	**TECNOAMBIENTE: SME marine survey industry challenges** Héctor Martínez, TECNOAMBIENTE
15:00	**subCULTron: A swarm of robots in the lagoon of Venice** Ronald Thenius, Uni Graz
15:20	**COFFEE BREAK**
15:40	**CADDY: Cognitive Autonomous Diving Buddy** Nikola Miskovic, University of Zagreb - FER
16:00	**The SeaCat Hybrid AUV: From toy to product** Jörg Kawla, ATLAS ELEKTRONIK GMBH
16:20	**VAMOS: Viable Alternative Mine Operating System** Eduardo Silva, ISEP / INESC TEC
16:40	**European Robotics League Emergency: A multi-domain outdoor robotics challenge** Gabriele Ferri, CMRE
17:00	**VISIT TO CIRS LAB** Marc Carreras, University of Girona
17:30	**END OF DAY ONE**
18:30	**Guided tour around the city of Girona (departure from Plaça Catalunya)**
20:00	**EMRA INFORMAL DINNER at Hotel AC Palau de Bellavista**

WORKSHOP PROGRAMME

16th MAY 2017, Tuesday

9:00	**GOOD MORNING COFFEE**
9:15	**KEYNOTE SPEAKER 2 - Underwater Robotics: Current commercial capabilities and future requeriments** Scott Reed, Seebyte Ltd
10:00	The WiMUST H2020 project: Widely scalable Mobile Underwater Sonar Technology Giovanni Indiveri, University of Salento (ISME)
10:20	MERBOTS: Multifunctional coopERative marine roBOTs for Intervention DomainS Pedro J Sanz, LSTS - Feup (Porto)
10:40	MARINE UAS: Innovative Training Network on Autonomous UAS for Marine and Coastal Monitoring José Pinto, LSTS - Feup (Porto)
11:00	**COFFEE BREAK**
11:20	MORPH: Marine robotic systems of self-organizing, logically linked physical nodes Bruno Cardeira, Instituto Superior Técnico (Lisbon)
11:40	OceanRINGS: Current State of Development and Future Work Edin Omerdic, University of Limerick
12:00	e-URready4OS: Underwater Robotics Ready for Oil Spill Javier Gilabert, Universidad Politecnica de Cartegena
12:20	ROBOCADEMY: the Future generation of Maritime and Underwater Robotics Research Thomas Vögele, DFKI
12:40	**OPEN DISCUSSION - Future directions and opportunities in marine robotics** Moderated by: Pere Ridao, University of Girona
13:15	**LUNCH**
14:30	**END OF DAY TWO**

HOW TO ARRIVE TO GIRONA

Best way to travel to Girona from Europe is by plane to Barcelona El Prat Airport or Girona Costa Brava Airport.

How to arrive from Barcelona Airport to Girona city (directly)

By bus: In terms of "comfort" and "easiness" it is a good option but there is a low frequency on the timetable (every 2h more or less). It costs around 20€/way. Check the complete timetable and purchase your tickets here: http://sagalesairportline.com/en

By taxi: Taxi without previous booking may cost you between 250€ and 300€ per way.

How to arrive from Barcelona Airport to Girona city (through Barcelona-Sants Central train station)

STEP 1: Reaching Barcelona Sants Central train station...

By taxi: It will take about 15-20 min and it cost approximately 30€.

By train: There is an airport train every 30 minutes that leads you to Barcelona-Sants Central station, it is a 25 minutes' ride and it costs approximately 4€.

STEP 2: Reaching Girona from Barcelona Sants Central train station...

By train: There are three kinds of trains, AVE / AVANT (37 min), MD (1h 20min) and Regional (2h). TIP: You can purchase the high speed train (AVE / AVANT) ticket (37 minute journey) in advance on the internet at: http://www.renfe.com/EN/viajeros/horarios.html

How to arrive from Girona Airport to Girona city

By taxi: It will take about 15 min and it will cost approximately 25€.

By bus: There is a bus that goes every 30 min to Girona Bus Station (city centre), it is a 25 minute ride and it costs around 2.75€/way.

WORKSHOP VENUE

The workshop will take place in **Edifici Narcís Monturiol Building**, in the Auditorium (ground floor) at the Technological and Scientific Park of the University of Girona.

TECHNOLOGICAL AND SCIENTIFIC PARK PLAN

EDIFICI NARCÍS MONTURIOL BUILDING

AUDITORIUM

REACHING THE WORKSHOP VENUE (from the city centre)

By bus: The bus which arrives to the Technological and Scientific Park is the **line 8** of local buses line. It leaves every 30 minutes from the train station and it is a 10-minute journey. The ticket costs about 2€/way.

By taxi: It will take about 5 minutes and it will cost approximately 6€.

Walking: If you feel fit and a promenade of 25 minutes on the riverside is possible, we strongly recommend you to walk to the Workshop venue.
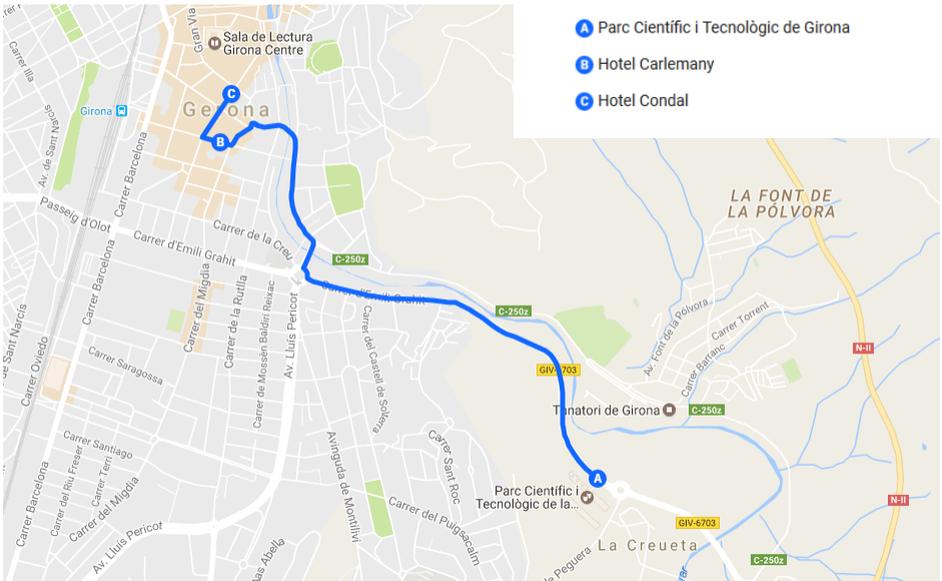
Coffee and drinks will wait for you upon arrival.

TIPS FOR ACCOMODATION

Because of their location, we suggest you to stay in either Hotel Condal (economic) or Hotel Carlemany (4*).

From there, walking, it takes 3 minutes to arrive to the train station and 5 minutes to the Old Square (Plaça Catalunya).

It is Flower Exhibition Festival in Girona, so, for the high demand these days, no special rates are currently available at the hotels.

A Parc Científic i Tecnològic de Girona
B Hotel Carlemany
C Hotel Condal

FLOWER EXHIBITION GUIDED TOUR

A free short guided tour on the flower exhibition will be organized on Monday evening. The meeting point will be at Plaça Catalunya right under the Catalan flag at 18:30h. The walking tour will end up in Hotel AC Bellavista (where we will have the informal dinner).

More about Flower Exhibition Festival: https://youtu.be/4lCaW4zYKpo

INFORMAL DINNER

The workshop informal dinner is booked at 20h in Hotel AC Palau de Bellavista 4*, located in the highest part of the old area of the city. The place offers a very nice view from Girona and we are preparing an evening full of surprises. **The tickets for the dinner will be sold in advance along the first day of the workshop in the Reception Desk** and will have to be paid in cash. A receipt will be provided to you. The menu is based on Mediterranean cuisine and it has a **cost of 53€/p.p**. If in your registration you requested joining the dinner, your seat is already booked but will not be assured until pre-payment will be done. Notice that the promenade to the place is steep and takes around 15 minutes from Plaça Catalunya. Dress code: CASUAL.

My EMRA 2017 feelings...

STRONGMAR MORPH ROBUST
EMRA'17
WORKSHOP
Girona CHALLENGES
UNDERWATER VISION
WIMUST MERBOTS VAMOS OceanRINGS
KNOWLEDGE TRANSFER
PROJECTS
EUROPE
EU
NETWORK
CONTACTS
STAKEHOLDERS
e-URready4OS MARIS SUNRISE CADDY
H2020 EUROPEAN ROBOTICS LEAGUE EXCELLABUST
APPLICATIONS
MARINE
www.marinerobotics.eu
ROBOCADEMY SUBCULTRON
BRIDGES SWARMs DexROV
UNIVERSITY OF GIRONA
ROBOTICS

www.marinerobotics.eu