

17 AU 21 OCTOBRE 2016 • DU 6 AU 10 MARS 2017

# HYDROGRAPHES & ROBOTICIENS

## EXPLORENT LE LAC DE GUERLÉDAN



- Projet pédagogique de terrain
- Capteurs et robots intelligents de demain
- Cartographie du fond et des berges du lac



GRANDE ÉCOLE D'INGÉNIEURS ET CENTRE DE RECHERCHE À BREST

avec le soutien de  
AFHY  
BOSKALIS  
CARIS  
IFREMER  
IXBLUE  
KONGSBERG  
MBDA  
METEO FRANCE  
OPS  
RTSYS  
SBG SYSTEMS  
SHOM  
TERIA  
THALES

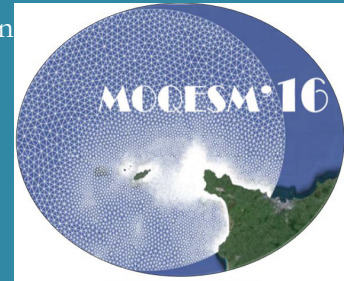
«Guerlédan 2016 : Hydrographers and Roboticists survey Guerlédan lake» is an innovative educational project lead by ENSTA Bretagne and its partners which aims to unite the hydrography and robotic community around field experiments.

A 6-month R&D training program has been included in the ENSTA Bretagne Master of Science (MSc). Students will require two sessions of intensive field tests to validate a demonstrator model.»

The objective of the training project is to enable students to work on genuine R&D projects in companies. They will develop and use autonomous robots and cutting edge hydrographic sensors. Students will carry out a complete study: setting-up acquisition systems, producing and processing data, undertaking design and automation of robots. They will acquire operational autonomy and a sense of initiative which will be necessary for their future careers.

Monitoring Quantitatif de l'Environnement Sous-Marin  
*International Conference on  
Quantitative Monitoring of Underwater Environment*

In the framework of the 10th Sea Tech Week



Le Quartz Center, Brest, France  
October 11-12, 2016

## Hydrography and robotics

## Marine robotics

## PROGRAM



SEA TECH  
event

## Invited Speakers

**Marc Carreras**, Associate Professor in the Computer Engineering department at Universitat de Girona (Spain), and member of the Computer Vision and Robotics institute working in the Underwater Vision and Robotics laboratory

**Andrea CAITI, Professor of Automatica**, (Systems and Control) at the University of Pisa, Italy. Director of Centro “E.Piaggio”, the research centre of excellence of the University of Pisa dedicated to robotics and bioengineering.

## Organizing Committee

### ENSTA Bretagne, Lab-STICC UMR CNRS6285

Luc JAULIN, Nathalie DEBESE, Fabrice LE BARS, Isabelle QUIDU, Benoît ZERR, Benoît CLEMENT, Annick BILLON-COAT

### GDR Robotique

Vincent CREUZE

## Useful informations

### Going to the airport :



#### By taxi

**Taxis 806** : +33 (0)2 98 806 806

**Taxis Brestois** : + 33 (0)2.98.801.801 or + 33 (0)2.98.80.43.43

**Taxi-Brest.com** : +33 (0)6 62 81 29 29

**Taxi des Korrigans** : +33 (0)6 99 97 80 00 or + 33(0)2 98 43 91 30

#### By trawway + shuttle

Airport Shuttle operates a correspondence with the tram line at the station Porte de Guipavas. This service is provided from 5:30 to 23:00, 7 days 7, all year (except May 1st).

## Some ideas for visiting Brest

### Museum of Tour Tanguy

Hystory of Brest through the centuries

Visit only on wednesday, thursday and the week-end,  
2: 00 - 5 : 00 PM

### Maritime museum castle

A great part of French naval history is to be found  
at the Castle of Brest

### Oceanopolis

With Oceanopolis ,discover the magic of tropical, temperate and  
polar marine worlds

The Conservatoire Botanique National of Brest

MOQESM is organized by



and the



With the support of

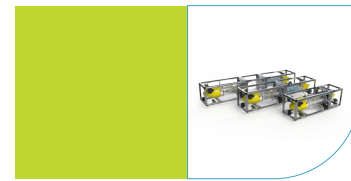


<http://moqesm.ensta-bretagne.fr/>

MOQESM'16

11 October 2016

Session 1 : Hydrography and Robotics



02 h 00 - 02 H 45 PM - [Plenary talk](#)

Overview of our current activities in marine robotics for survey, focusing on long-term endurance, low-cost deployment, acoustic navigation in team.

Andrea CAITI, University of Pisa

02 h 45 - 03 h 15 An introduction to robotics for hydrographers.

Luc Jaulin, Lab-STICC, Brest

03 h 15 - 03 h 45 Trends and challenges in hydrography.

Laurent LOUVART, SHOM Brest

[Coffee break](#)

4 : 00 - 4 : 30 Fast Fourier-Based Block-Matching Algorithm for Non-Rigid Sonar Tracks Registration in a Multi-Resolution Framework

Florian NICOLAS/Thales

4 : 30 - 5 : 00 Lake Guerlédan, an hydrographic and robotic educational project

Thomas LE MEZO, Lab-STICC, ENSTA Bretagne

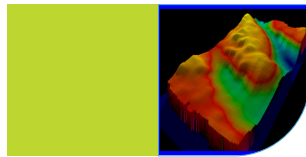
5 : 00 - 5 : 30 "SEAPIX: a Multi Usage Multibeam Sonar for Hydrography and Robotics Applications"

Didier CHARLOT, IXblue

5 : 30 - 6 : 00 Recent advances in robotics for underwater archaeology within the Corsaire Concept Project

Vincent CREUZE, LIRMM Montpellier

07h 00 - [A welcome cocktail in an exceptional setting in Brest: "Les Capucins"](#)



9 : 00 – 09 : 45 AM **Pleanary talk**

AUVs and/or activities.

Marc Carreras, University of Girona

09 : 45 – 10 : 15

Submarine free model trials for the assessment of hydrodynamics effects and robotics applications

Xavier Dal SANTO, DCNS Research/SIRHENA

**Coffee Break**

10 : 30 – 11 : 00

Avoiding obstacles for sailboat robots at the WRSC'16 competition

Alaa El Jawad, Fabrice Le Bars, Patrick Rousseau, ENSTA-Bretagne, Ifremer.

11 : 00 - 11 : 30

A ROV for automatic survey of an underwater environment

Frédéric Maussang, Lab-STICC, Télécom Bretagne

11 : 30 – 12 : 00

Underwater Robots Equipped with artificial electric sense for the exploration of unconventional aquatic niches

Stephane Bazeille, Ecole des Mines de Nantes.

12 : 00 – 12 : 30

Hydrocontest, Designing tomorrow's boats

Emilien Fournier, Maxime Bouyssou, Patrick Rousseau, etc. ENSTA-Bretagne

**Lunch**



2 : 00 – 2 : 30 PM

Secure the Biscay bay from intruders with a group of underwater robots.

Luc JAULIN, Lab-STICC, ENSTA Bretagne.

2 : 30 – 3 : 00

Adaptive sampling with a fleet of autonomous sailing boats using artificial potential fields

Frédéric Plumet, Université Versailles St Quentin

3 : 00 – 3 : 30

Guaranteed Assessment of the Area Explored by an AUV

Benoît DESROCHERS, DGA/TN Brest

**Coffee Break**

3 : 45 - 4 : 15

Coordinated Control of Two Robotic Arms for Underwater Manipulation of Deformable Biological Specimens

François Leborne, Ifremer, LIRMM.

4 : 15 - 4 : 45

Pattern formation for a fleet of AUV'S based on optical sensor,

Xiaomin WANG, Ocean University of China.

4 : 45 - 5 : 15

SARDINE : a low-cost AUV for detection, localization, tracking and mapping of underwater targets.

Fabrice Le Bars, Lab-STICC, ENSTA-Bretagne.

5 : 15 - 5 : 45

Optimization of AUVs propulsion system for underwater infrastructures monitoring.

Pablo Emanuel Vega and/or Olivier Chocron, ENIB, Institut de Recherche Dupuy de Lôme