

Des robots marins et sous-marins pour cartographier les fonds de l'océan

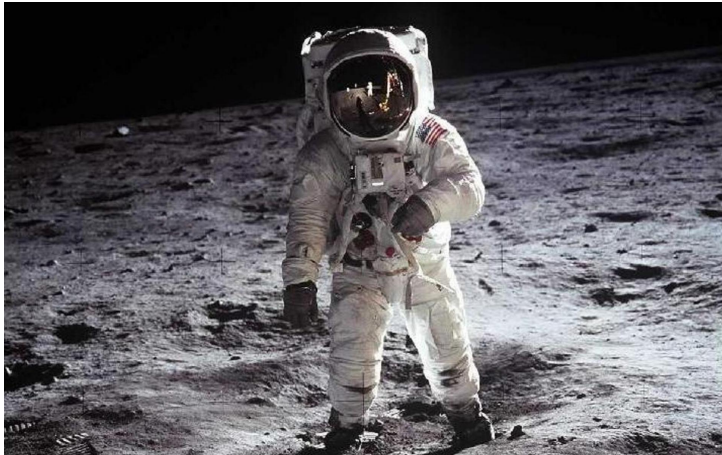
L. Jaulin

Présentation au SHOM, dans le cadre du projet MAGIDRO
Mercredi 27 novembre 2019



Marine robots to build maps

Robots for exploration



Robots are needed for dirty, dangerous and dull jobs



Curiosity



About 3,600 satellites in orbit.

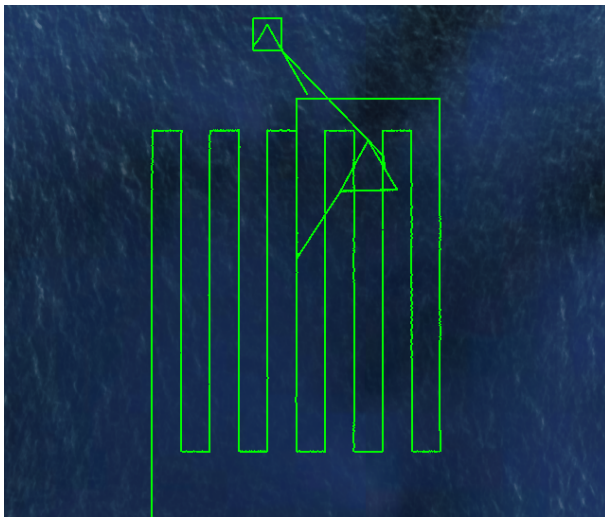
In the ocean, we have gliders, drifting buoys.

In the ocean, a robot should be autonomous in energy (**persistent autonomy**).



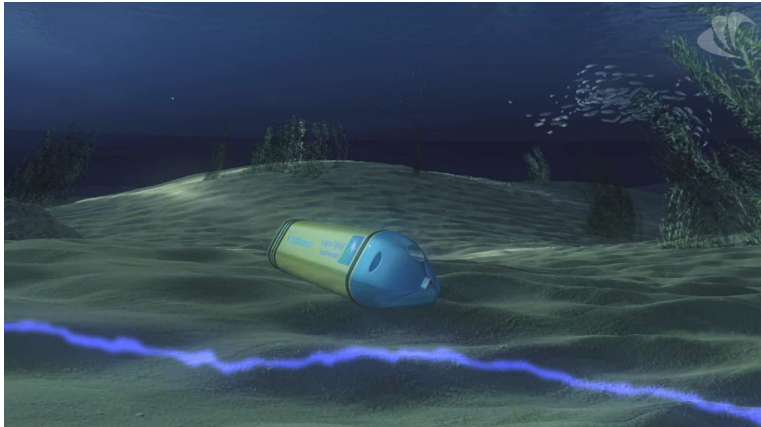
Marine robots to build maps All underwater Loops





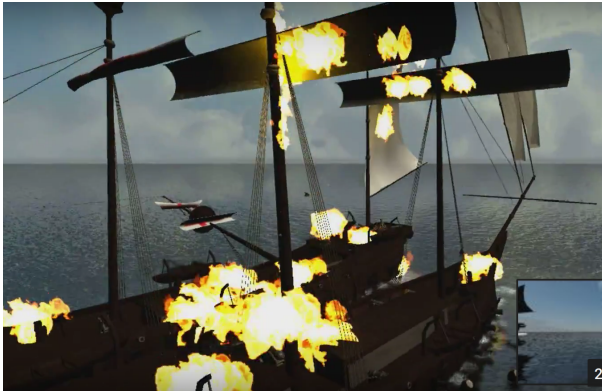
Middle of Atlantic ocean, 350 km made by Vaimos, sept. 6-9, 2012. ↻ 🔍 🔗





[Youtube](#)

Recherche de la Cordelière



Reconstitution de la bataille

[Youtube](#)



Premières recherches avec Boatbot

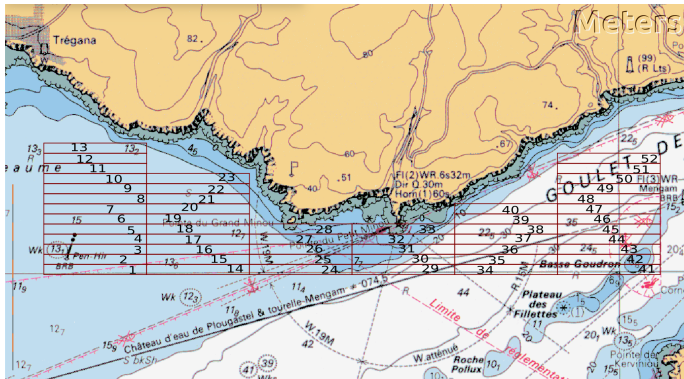
[Youtube](#)

[boatbot.html](#)

Marine robots to build maps

All underwater

Loops

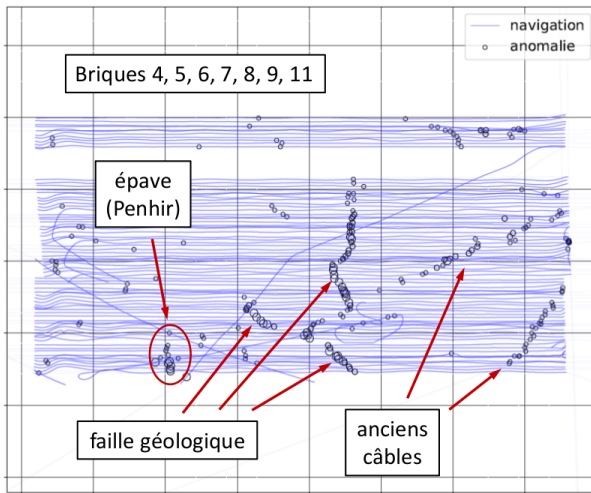




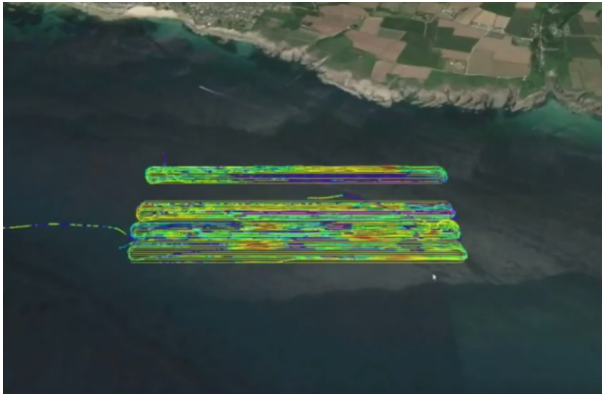
Boatbot tracte un magnétomètre

youtu.be/cxVs1fDdm1s





Magnetic map built in 2018



Magnetic map built in 2019

[Youtube](#)

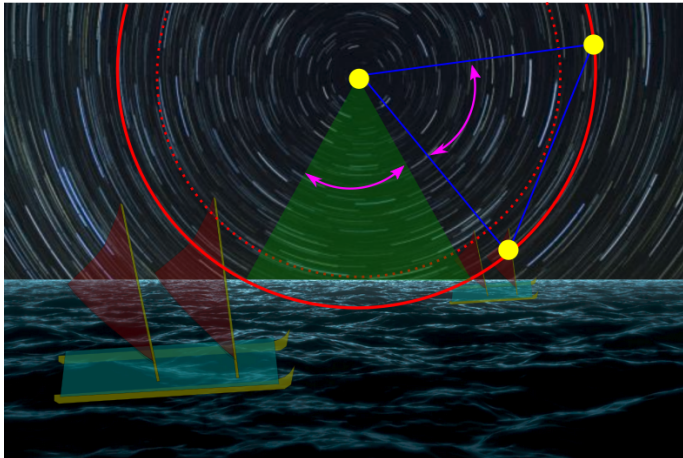
All underwater

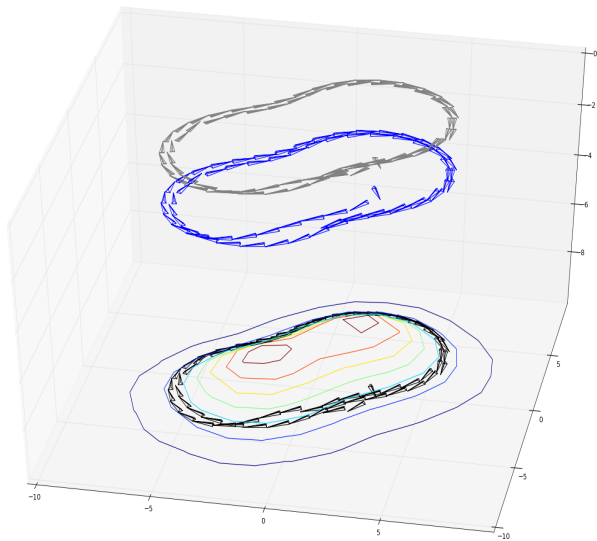


Submeeting 2018

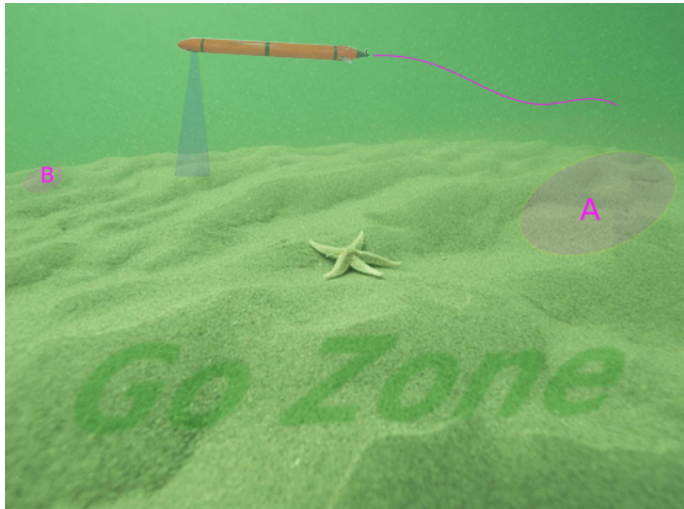


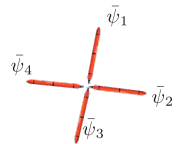
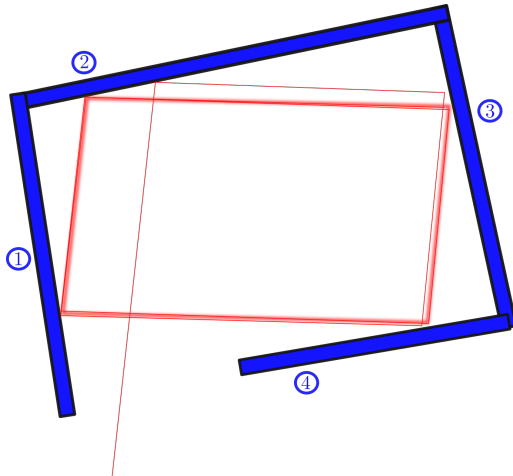
Find the route without GPS, compass and clock

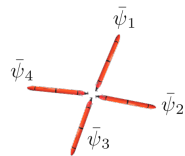
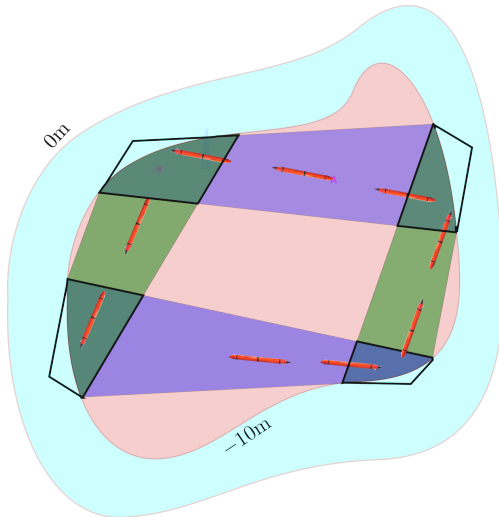


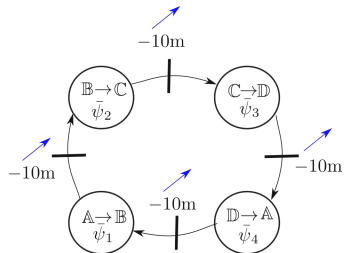
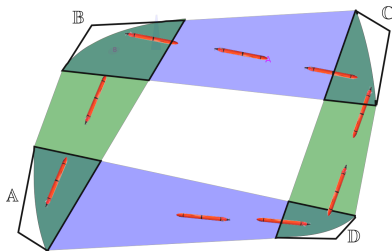


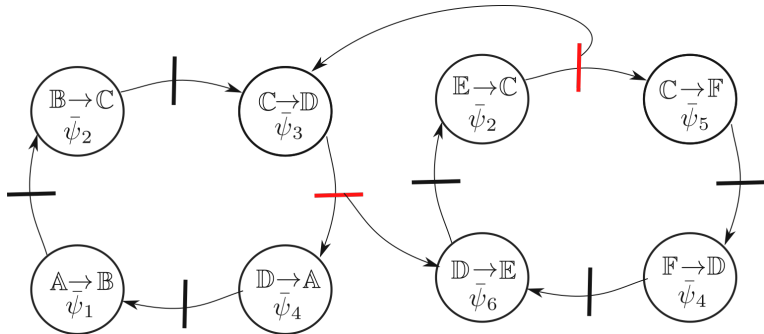
Cycles

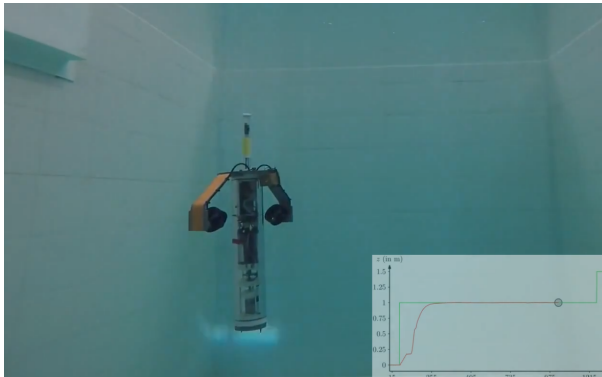








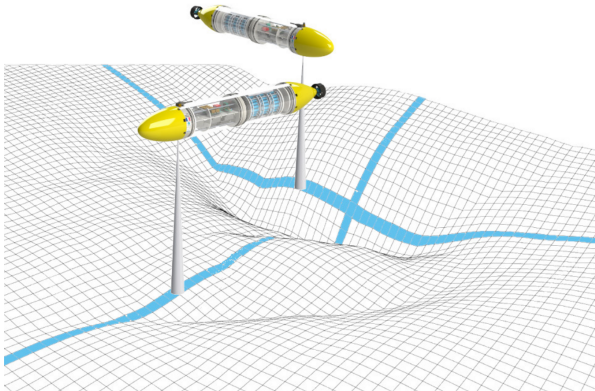




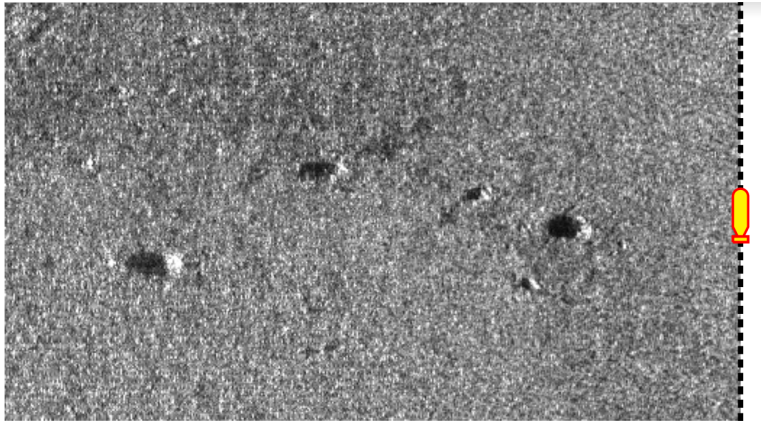
Pseudo-Lagrangian float for building a map of underwater currents
[3]

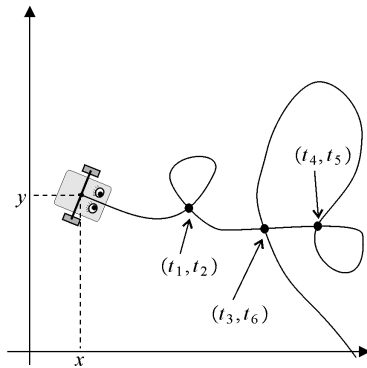
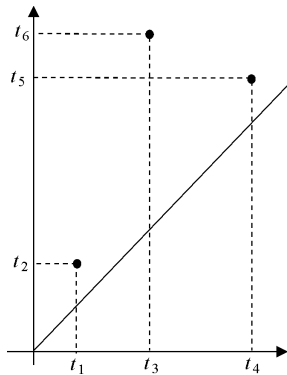
[Youtube](#)

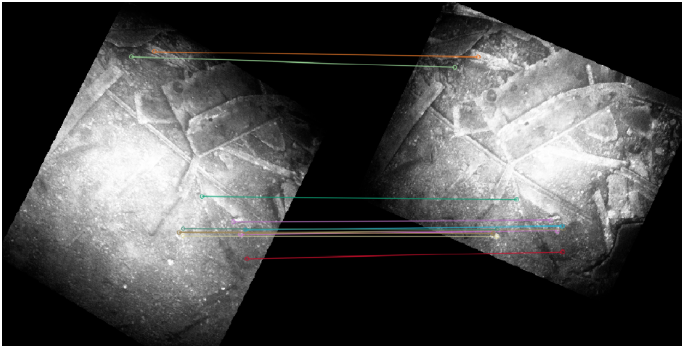
Loops



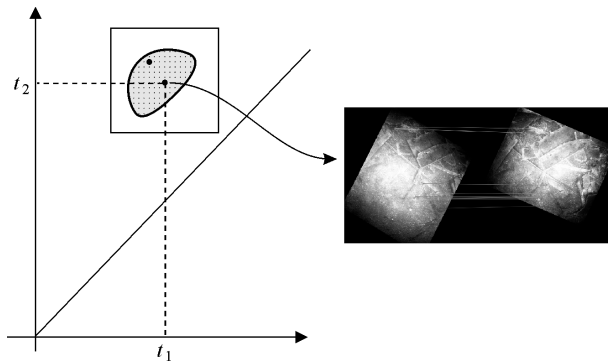
[4]

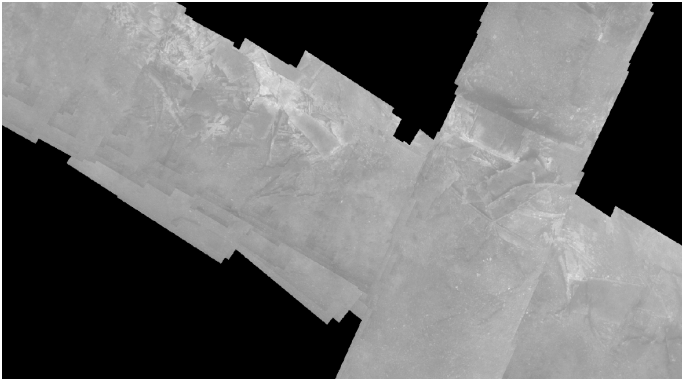






Are you sure we made a loop ?





With M. Laranjeira and S. Tauvry [2]



L. Jaulin.

Isobath Following using an Altimeter as a Unique Exteroceptive Sensor.

In Sophia M. Schillai and Nicholas Townsend, editors, *Robotic Sailing 2018*, pages 105–110, 2018.



M. Laranjeira, L. Jaulin, and S. Tauvry.

Underwater mosaics using navigation data and feature extraction.

Reliable Computing, 22:116–137, 2016.



T. Le Mézo, G. Le Maillot, L. Jaulin T. Ropert, A. Ponte, and B. Zerr.

Design and control of a low-cost autonomous profiling float.

In *CFP'19*. Brest, France, June 19-22, 2019.



S. Rohou, L. Jaulin, L. Mihaylova, F. Le Bars, and S. Veres.

Reliable robot localization.

ISTE Group, 2019.