Robex : Robotics for exploration

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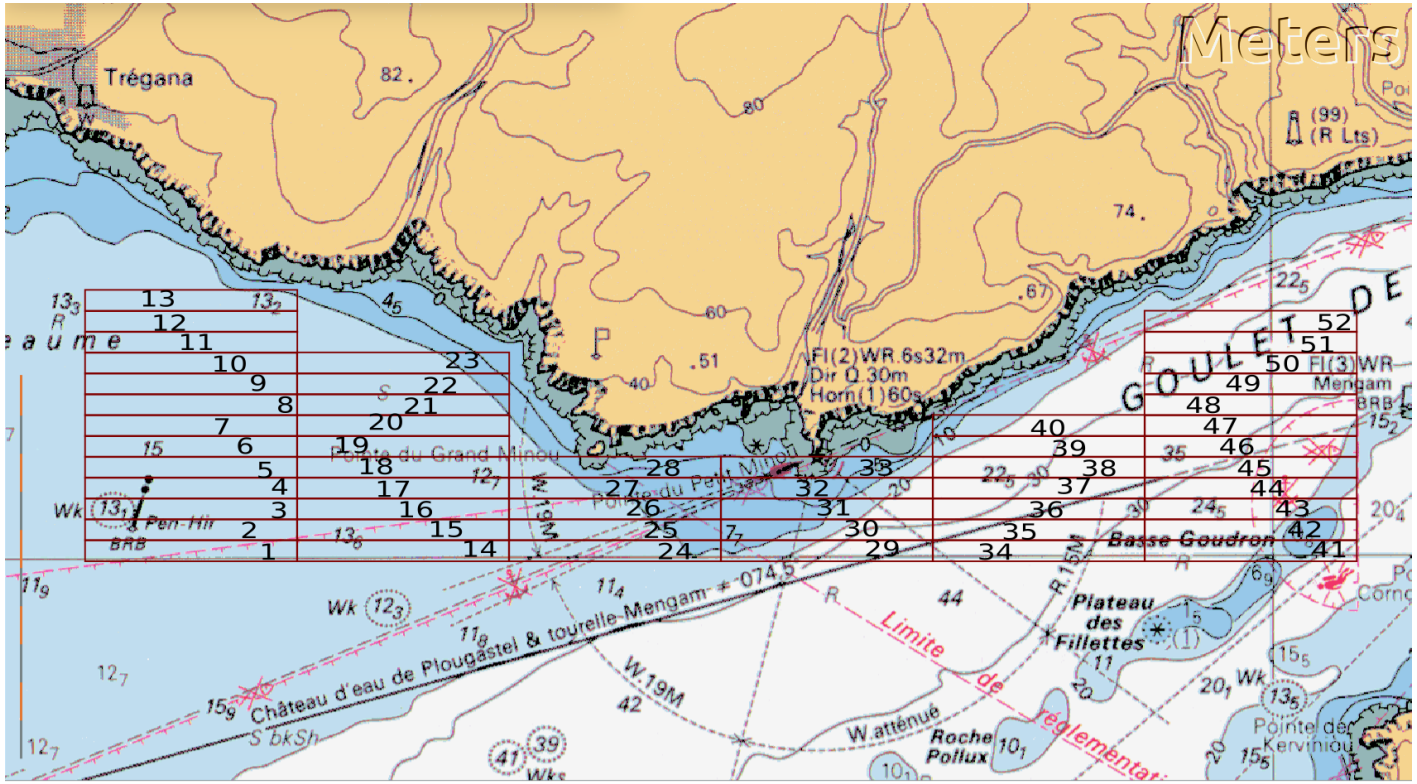
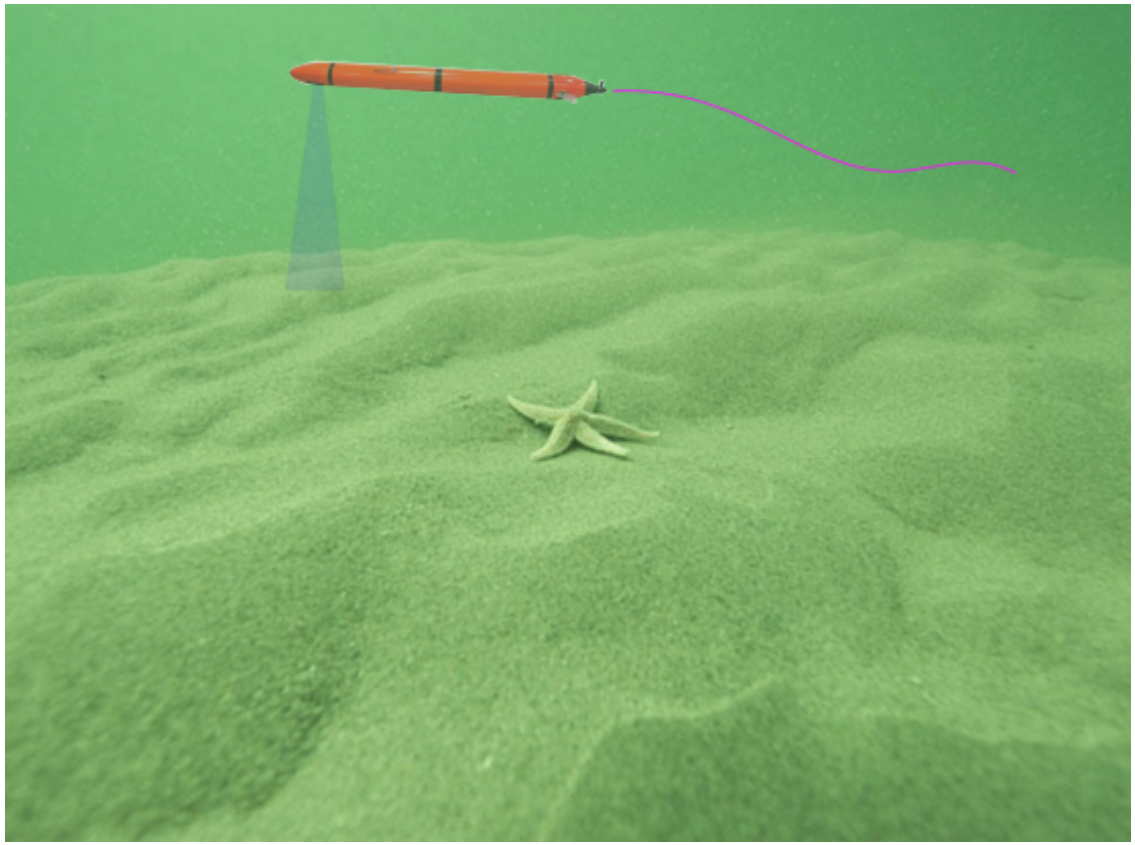
2-3 Mars 2023
Séminaire Lab-STICC, Moulin Mer

1. Marine robots to build maps


Meters
Trégana
Fl(2)WR.6s32m
Dir Q.30m
Horn(1)60s
Basse Goudron
Plateau des Fillettes
Roche Pollux
Limite de réglementat
Château d'eau de Plougastel & tourelle-Mengam
Pointe du Grand Minou
Pointe du Petit Minou
Pen-Hir
Pointe de Kerviniou
W.19M
R.15M
GOULET DE

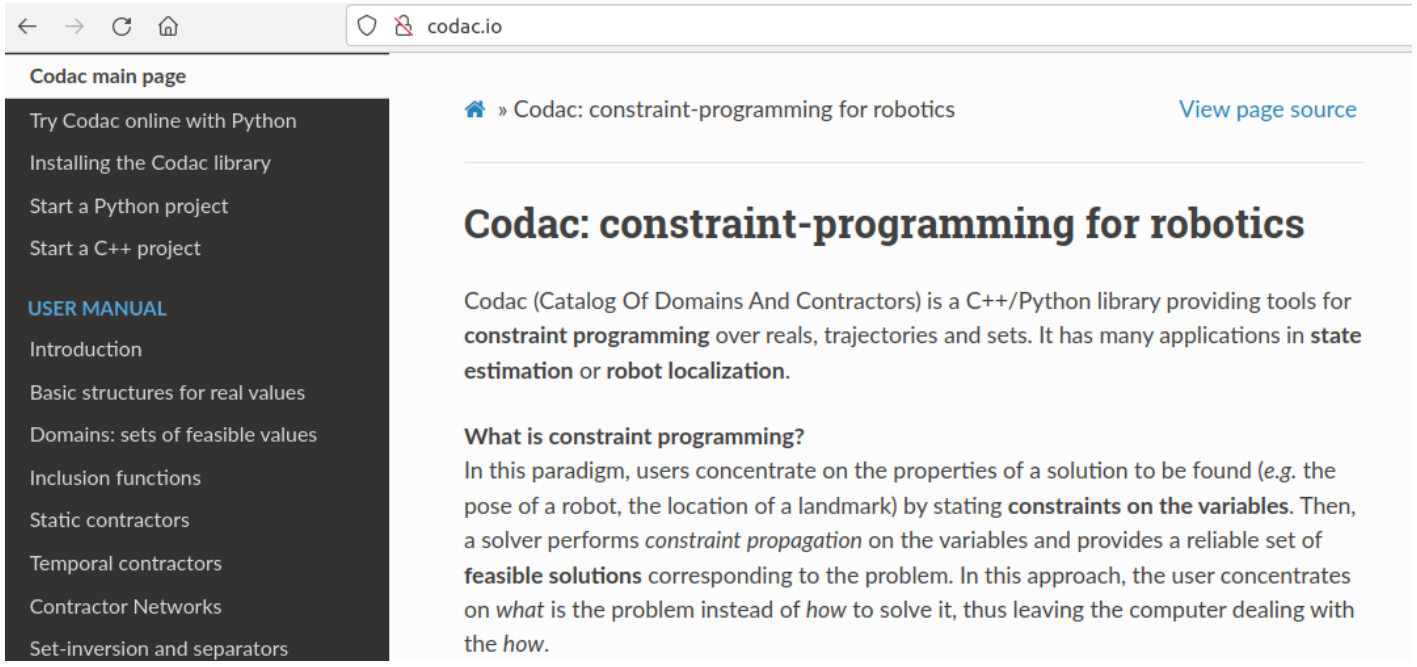


2. Point marquant : codac.io

Given

$$\begin{cases} \dot{\mathbf{x}} = \mathbf{f}(\mathbf{x}) \\ \mathbf{y} = \mathbf{g}(\mathbf{x}) \\ \mathbf{y}(t) \in [\mathbf{y}](t) \end{cases}$$

Codac yieds an envelope for $\mathbf{x}(t)$.



An interval based library for verification in robotics

3. Publications de 2022

1. A. Morge, V. Pelle, J. Wan and L. Jaulin (2022). Experimental Studies of Autonomous Sailing with a Radio Controlled Sailboat, IEEE Access.
2. C. Viel, J. Drupt, C. Dune, V. Hugel (2022). ROV localization based on umbilical angle measurement, Ocean engineering.
3. L. Jaulin (2022). Actions of the hyperoctahedral group to compute minimal contractors, Artificial Intelligence, Volume 313.
4. J. Damers, L. Jaulin and S. Rohou (2022). Lie symmetries applied to interval integration, Automatica, Volume 144.
5. C. Viel (2022). Self-Management of ROV Umbilical Using Sliding Buoys and Stop, IEEE Robotics and Automation Letters. Volume 7, Issue: 3, page(s): 8061-8068.
6. A. Ehambram, L. Jaulin and B. Wagner (2022). Hybrid Interval-Probabilistic Localization in Building Maps, IEEE Robotics and Automation Letters. Volume 7, Issue: 3, page(s): 7059-7066

7. A. Rauh, Y. Gourret, K. Lagattu, B. Hummes, L. Jaulin, J. Reuter, S. Wirtensohn and P. Hoher (2022). Experimental Validation of Ellipsoidal Techniques for State Estimation in Marine Applications, Algorithms.
8. I. Mopin, J. Marchal, M. Legris, G. Le Chenadec, P. Blondel, B. Zerr (2022). Design and field testing of a non-linear single-beam echosounder for multi-frequency seabed characterization, Applied Acoustics, Elsevier.
9. L. Jaulin (2022). Géométrie et Commande des Drones, Techniques de l'ingénieur.
10. A. Bourgois, S. Rohou, L. Jaulin and A. Rauh (2022). Proving Feasibility of a Docking Mission: A Contractor Programming Approach, Mathematics.
11. C. Viel (2022). A Self-management of the umbilical of a ROV for underwater exploration, Ocean Engineering
12. J. Tillet, L. Jaulin, F. Le Bars and R. Boukezzoula (2022). A

Fuzzy Set Estimation Using Interval Contractors: Application to Localization, Reliable Computing, pp. 4-25.

13. R. Boukezzoula, L. Jaulin and D. Coquin (2022). A New Methodology for Solving Fuzzy Systems of Equations: Thick Fuzzy Sets Based Approach, Fuzzy Sets and Systems, 435, pp 107-128.