Characterization of the Area Explored by a Line-Sweep Sensor on the Plane Sub-meeting, Guerlédan

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- 2 Speboat
- 3 Mission





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- 2 Speboat
- **3** Mission





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Case of Study

Speboat



Context

- Unknown environment,
- area covering mission,
- revisiting,
- region avoidance,
- line-sweep exploration.





Case of Study

Speboat



Objectives

Using only proprioceptive data, to estimate:

- Explored area
- Number of views (coverage measure)







Side Scan Sonar









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Side Scan Sonar









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Context

Characterization of the Explored Area



Algorithm:

- Topological Degree,
- Interval Analysis.





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Context

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Characterization of the Explored Area



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$$\mathbb{A}_{\mathbb{E}} = \{oldsymbol{p} \in \mathbb{R}^2 | c_m(oldsymbol{p}) \geq 1\}$$







Applications:

- Assess area-covering missions,
- plan other missions to fill possible gaps,
- assess revisiting missions,
- optimal trajectory planning,
- localization in homogeneous environments.





2 Speboat

3 Mission





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Speboat



Data

- GPS,
- IMU,
- Underwater Camera,
- Remote Controled,
- Autonomous via IHM.









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Speboat Guerlédan

Lego Search







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Speboat Guerlédan

Lego Search







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