

# A Hybrid Algorithm for Coverage Path Planning With Imperfect Sensors

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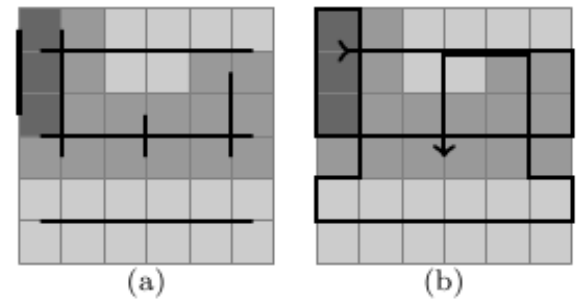
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- **Coverage path planning** problem:
  - **Minimize distance** then minimize **turns**;
  - **Imperfect sensors** and **extended range**.
- **DpSweeper** - A novel **fast, general** and **reliable** approach to:
  - **achieve the coverage** with *disconnected* path segments (dynamic programming);
  - **optimally link** the *path segments* (traveling salesman problem).
- **No customized fine-tuning** are required.
- **Application**: *underwater demining*.



DpSweeper outline:  
(a) Segments to attain the required coverage.  
(b) The TSP optimally links the path segments.  
(Darker cells require more scans.)

**Related paper:**

M. Morin, I. Abi-Zeid, Y.R. Petillot, and C.G. Quimper. “A Hybrid Algorithm for Coverage Path Planning with Imperfect Sensors,” in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2013)*, Tokyo, Japan, 2013.