Exploiting semantic information in indoor environments

Mathias Fassini Mantelli

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Institute of Informatics
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November 25, 2021

FIRST YEARS OF MOBILE ROBOTICS

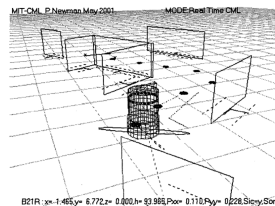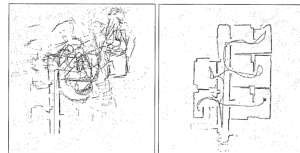- Ages of mobile robotics:
  - Classical age (1986-2004)

(A) Real Time CML[1]

(B) Online mapping[2]

FIGURE: Initial works on SLAM

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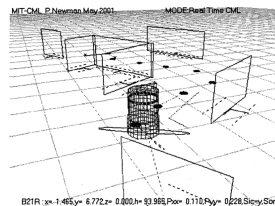   - ▶ **Lidar** and **sonar** sensors

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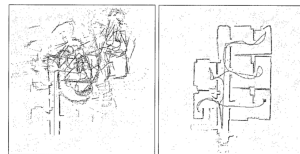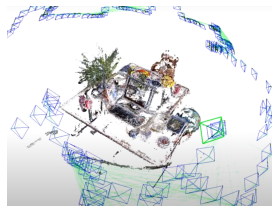   - **Lidar** and **sonar** sensors
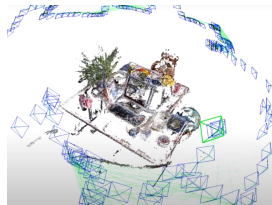 - Algorithmic-analysis age (2004-2015)

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    - **Geometric perception**
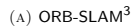

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GEOMETRIC PERCEPTION

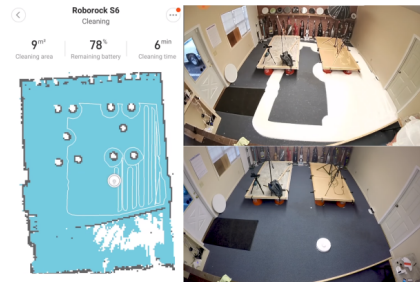- Efficient for **building maps** and **state estimation**

FIGURE: Vacuum cleaner robot in operation.[5]

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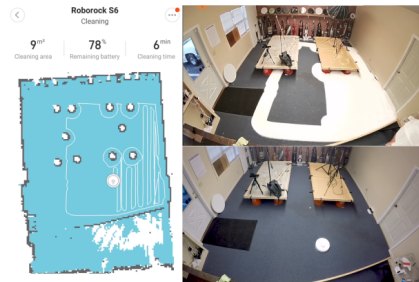- Useful for many **robotic tasks**

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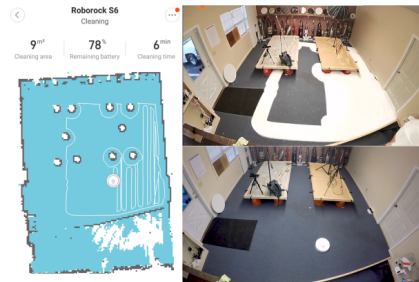- Useful for many **robotic tasks**
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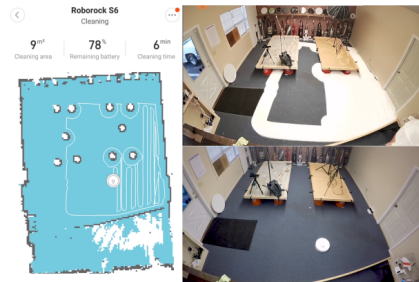- Useful for many **robotic tasks**
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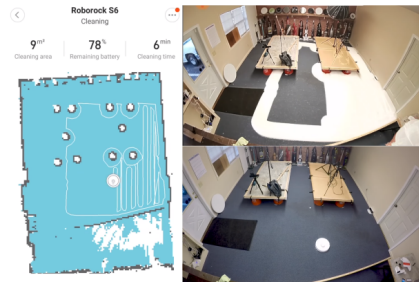 - Type of maps (free, occupied, unknown)
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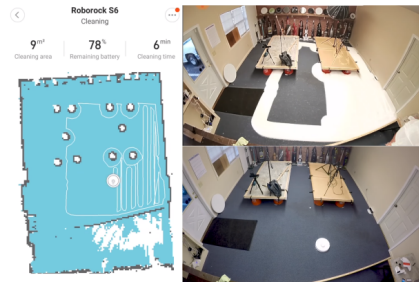 - Does not distinguish obstacles
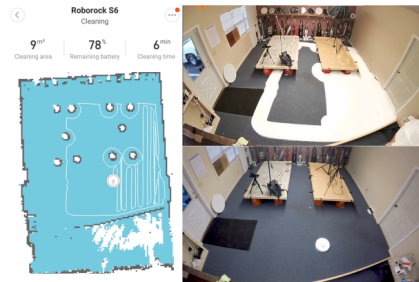 - Insufficient for high-level tasks
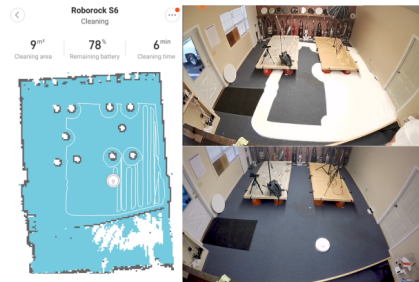- How to overcome these limitations?

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SEMANTIC PERCEPTION

- Name objects and features in the scene
- Associate meaning to the parts of the map
-

JUSTIFICATIVA: BLOCOS

BLOCK 1

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer lectus nisl, ultricies in feugiat rutrum, porttitor sit amet augue. Aliquam ut tortor mauris. Sed volutpat ante purus, quis accumsan dolor.

BLOCK 2

Pellentesque sed tellus purus. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos himenaeos. Vestibulum quis magna at risus dictum tempor eu vitae velit.

Objetivos

Objetivo Geral

O objetivo geral é fazer um algoritmo para calcular expressão gênica a partir de uma parte da sequência de RNA

Objetivos Específicos

- Objetivo específico 1
- Objetivo específico 2
- Objetivo específico 3
- Objetivo específico 4

Fundamentação Teórica

- Nós utilizamos essa abordagem
- Assim assim
- Assado

Fundamentação Teórica

Nesta **abordagem** nós fizemos bla bla bla

- Exemplo de item

- Exemplo de item

Theorem (Mass–energy equivalence)

$E = mc^2$

METODOLOGIA

Passos da metodologia

1. Statement
2. Explanation
3. Example

Explicando alguma coisa ... lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer lectus nisl, ultricies in feugiat rutrum, porttitor sit amet augue. Aliquam ut tortor mauris. Sed volutpat ante purus, quis accumsan dolor.

Resultados

Treatments	Response 1	Response 2
Treatment 1	0.0003262	0.562
Treatment 2	0.0015681	0.910
Treatment 3	0.0009271	0.296

Table: Table caption

Resultados

Figure: Aqui temos a imagem da cachoeira.

Conclusão

- more work

- more responsibility

- more satisfaction

Agradecimentos

Agradeço a fulano, ciclano e beltrano que apoiaram o desenvolvimento dessa pesquisa.

Referências I

📄 Shuntaro Takahashi, Hiroyuki Furusawa, Takuya Ueda, and Yoshio Okahata.
Translation enhancer improves the ribosome liberation from translation initiation.
Journal of the American Chemical Society, 135(35):13096–13106, 2013.

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