

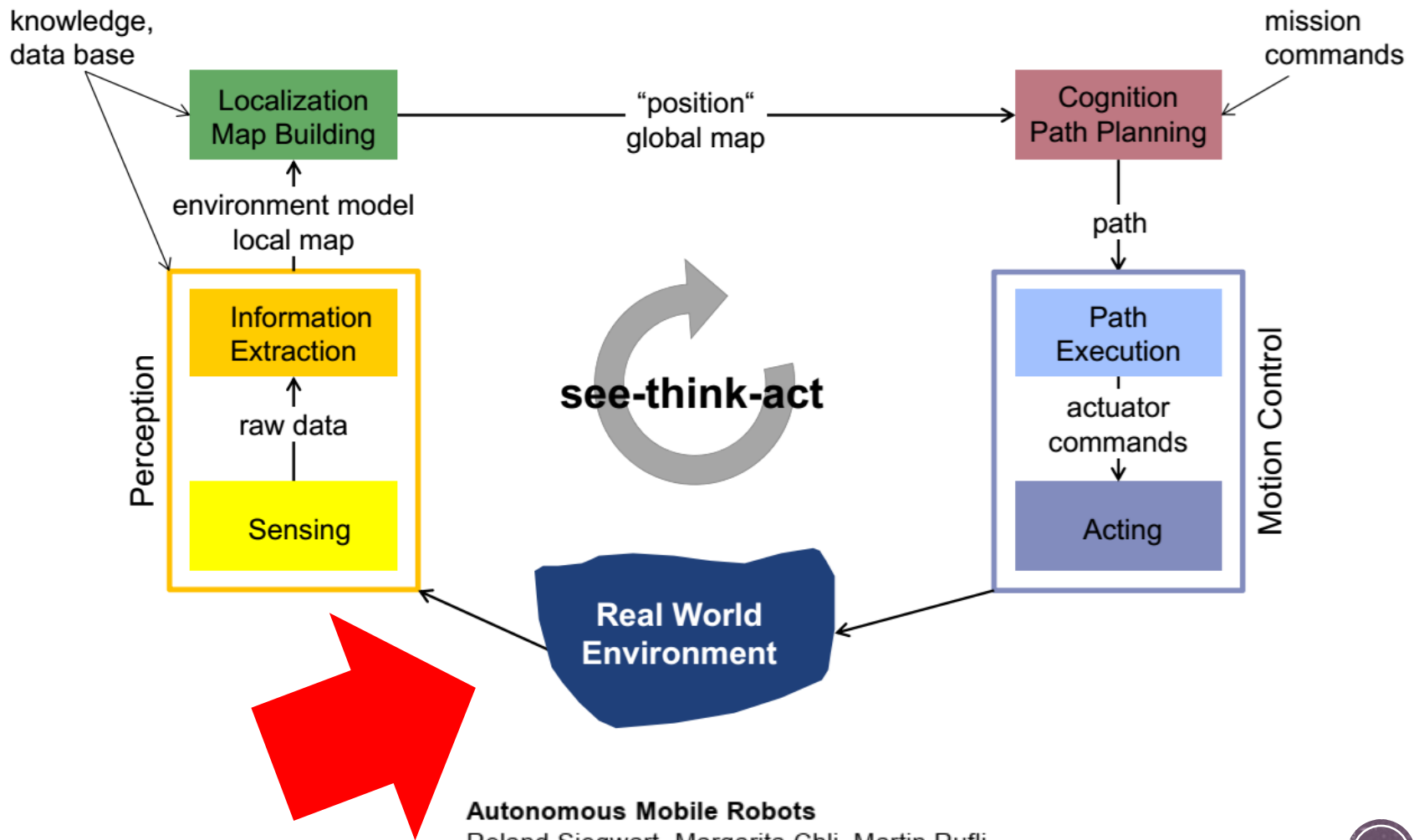
Introdução ao Simulador Stage

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Inteligente**

C3 - Centro de Ciências Computacionais

FURG - Universidade Federal do Rio Grande



Simulação Robótica

- Testes com robôs reais são geralmente:
 - Riscos aos Robôs (e ao ambiente)
 - Tediosos
 - Caros



Embora existam vários simuladores

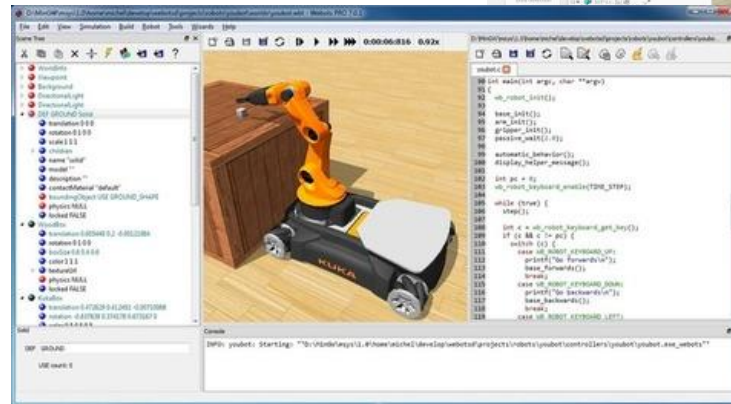
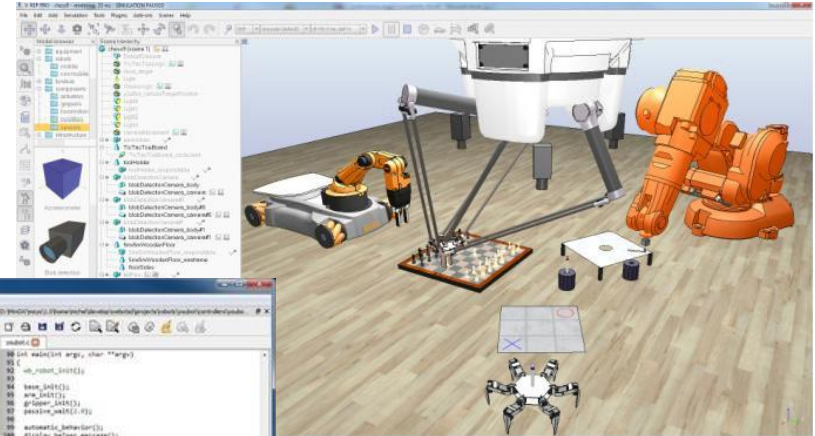
- V-REP
 - V-REP was discontinued in 2019
 - CoppeliaSim

- Webots

- 4DV-Sim

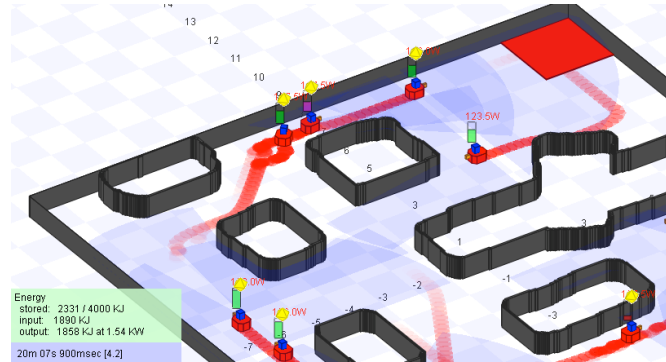
- Entre outros

- https://pt.wikipedia.org/wiki/Simulador_de_rob%C3%B3tica

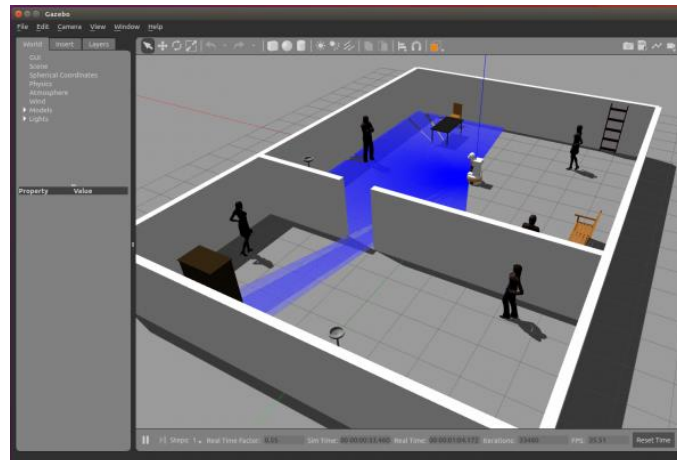


Simuladores da Open Source Robotics Foundation(OSRF)

- Stage (2.5D)

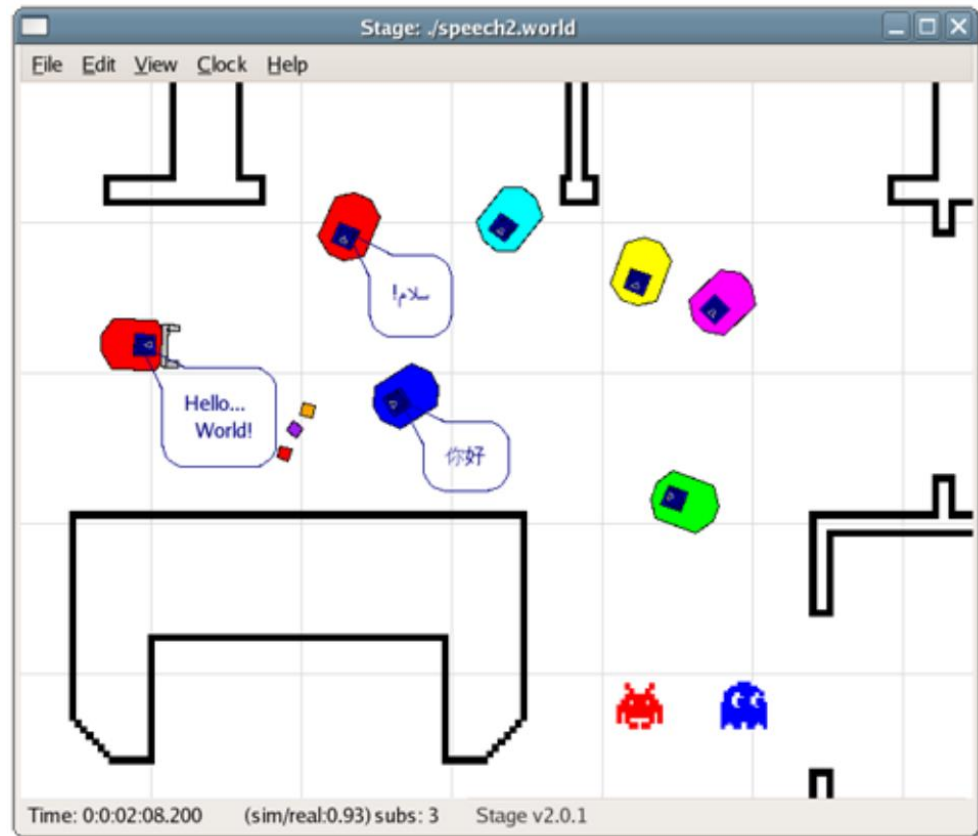


- Gazebo (Full 3D)
 - Falaremos mais sobre ele em momento futuro



Stage

- Custo-benefício entre as simulações de alta fidelidade e as simulações em um mundo de *grid*
- Rápido o suficiente para simular grandes populações
- O ruído é obtido indiretamente por meio da discretização



Gabriele Randelli
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Stage

- Histórico
 - Começa em 2003 com paper no ICAR sobre Player/Stage

In *Proceedings of the International Conference on Advanced Robotics (ICAR 2003)*
pages 317-323, Coimbra, Portugal, June 30 - July 3, 2003.

The Player/Stage Project: Tools for Multi-Robot and Distributed Sensor Systems

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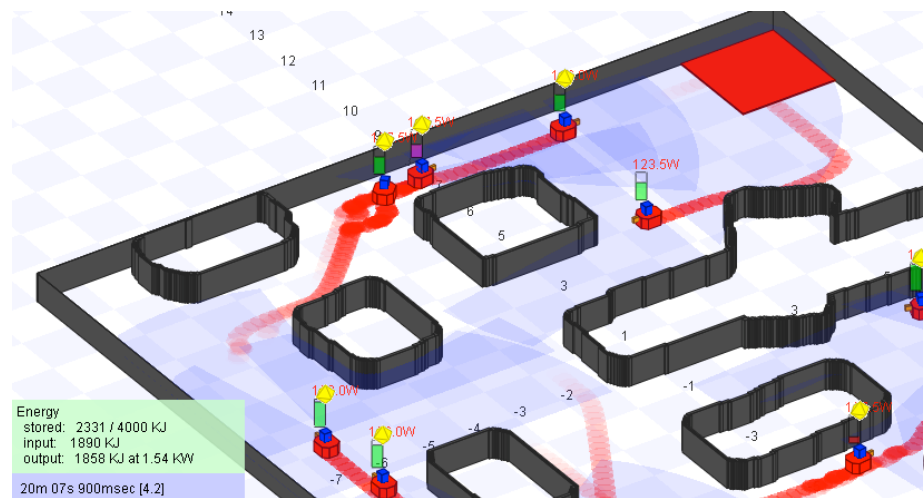
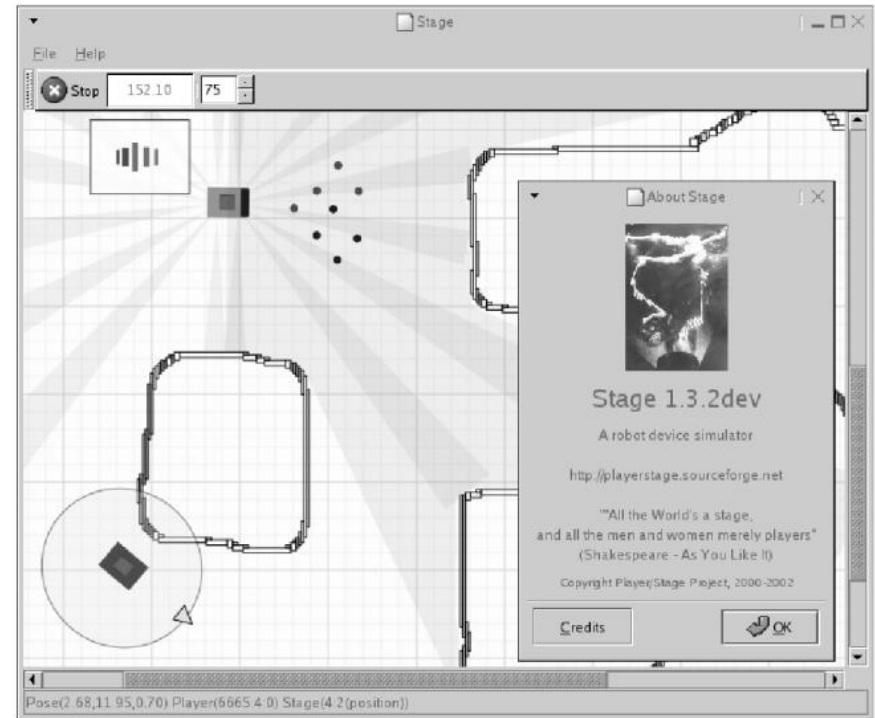
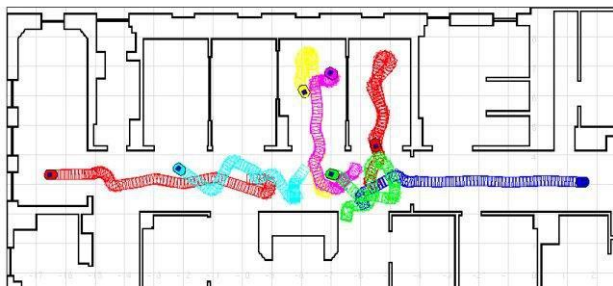
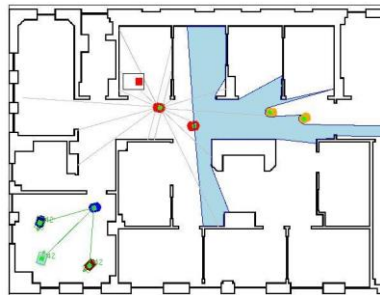
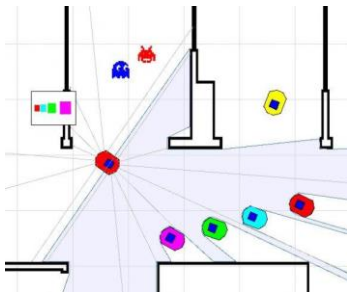
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Stage

- Evolução
 - Version 4.1.1 (2012)
 - <http://rtv.github.io/Stage/release.html>



Stage

- **Worldfile** (interval_sim, resolution, quit_time,...)
- **GUI** (*window* block)
- **Models:**
 - Actuator
 - Blinkenlight
 - Blobfinder
 - Camera
 - Fiducial detector
 - Gripper
 - Position
 - Ranger



Mãos na massa

- Vídeo gravado pelo Ricardo
 - <https://www.youtube.com/watch?v=O-wPWAL9KgI>
- Video gravado pelo Junior
 - <https://www.youtube.com/watch?v=ESQih1IQX44>

