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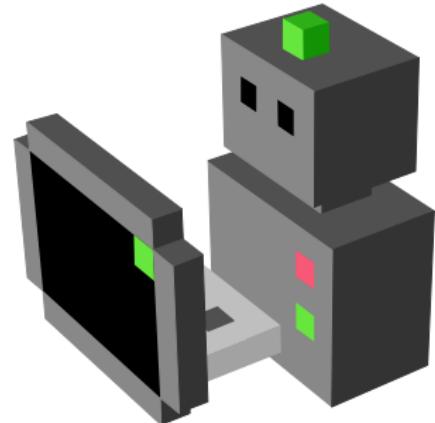


MORSE & HRI

Recent Perspectives

October 13, 2014

Séverin Lemaignan, Marc Hanheide,
Michael Karg, Harmish Khambaita,
Lars Kunze, Florian Lier,
Ingo Lütkebohle and Grégoire Milliez



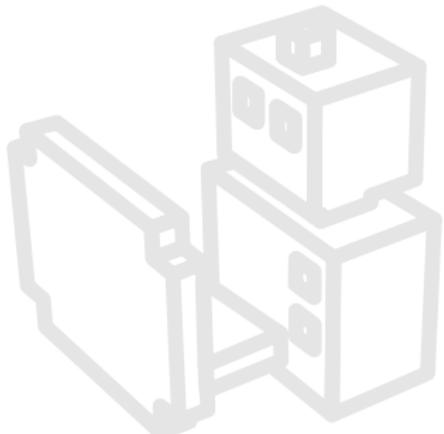
OVERVIEW

1. Brief Recap of MORSE

2. Simulating HRI

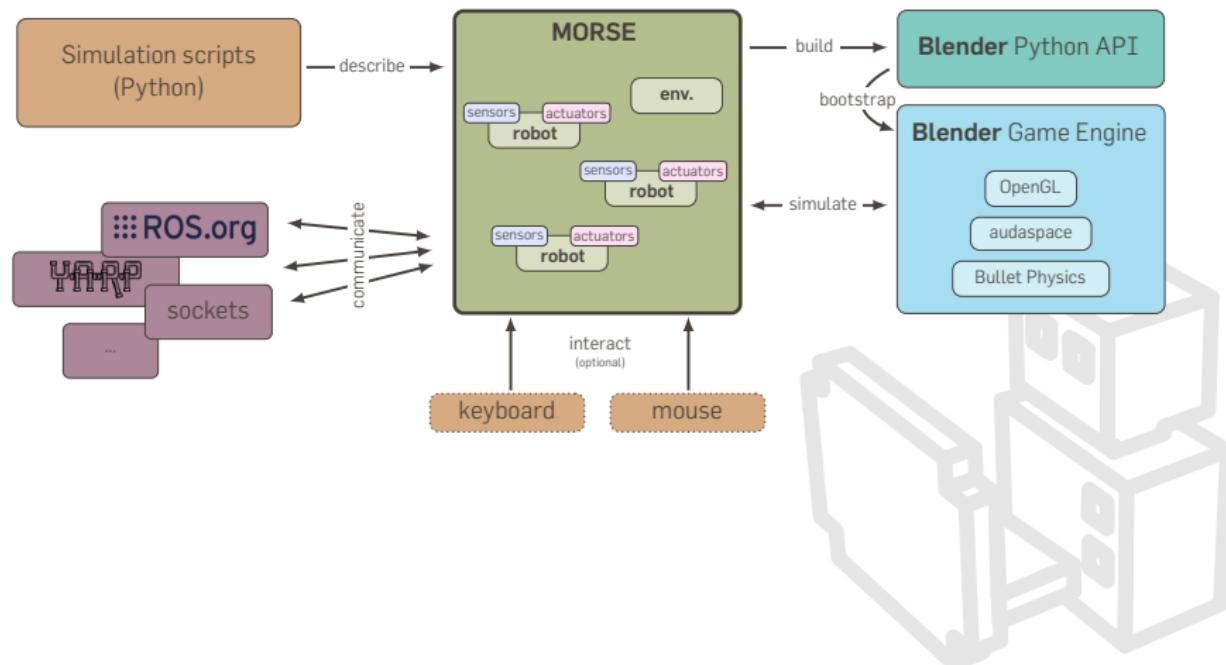
3. Less Usual Use-cases

4. What Next?

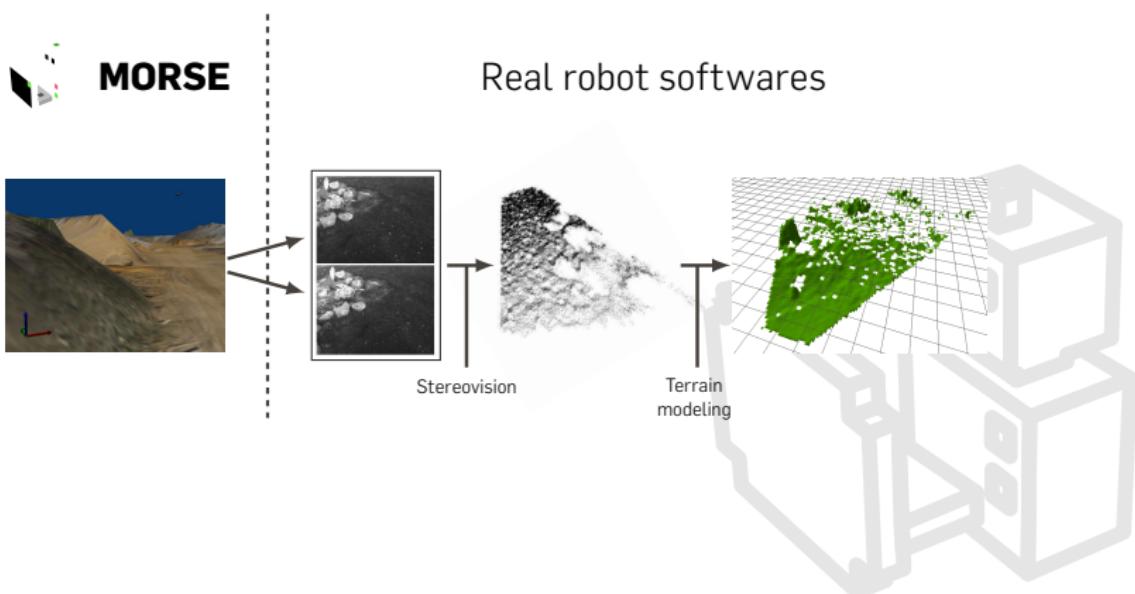


BRIEF RECAP OF MORSE

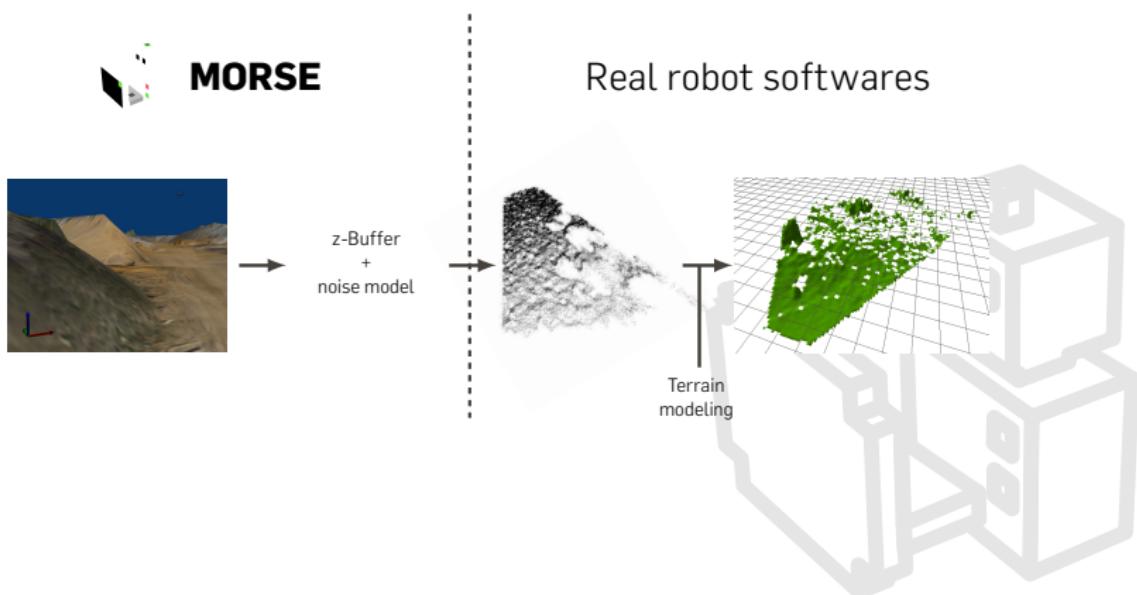
A "SOFTWARE IN THE LOOP" SIMULATOR



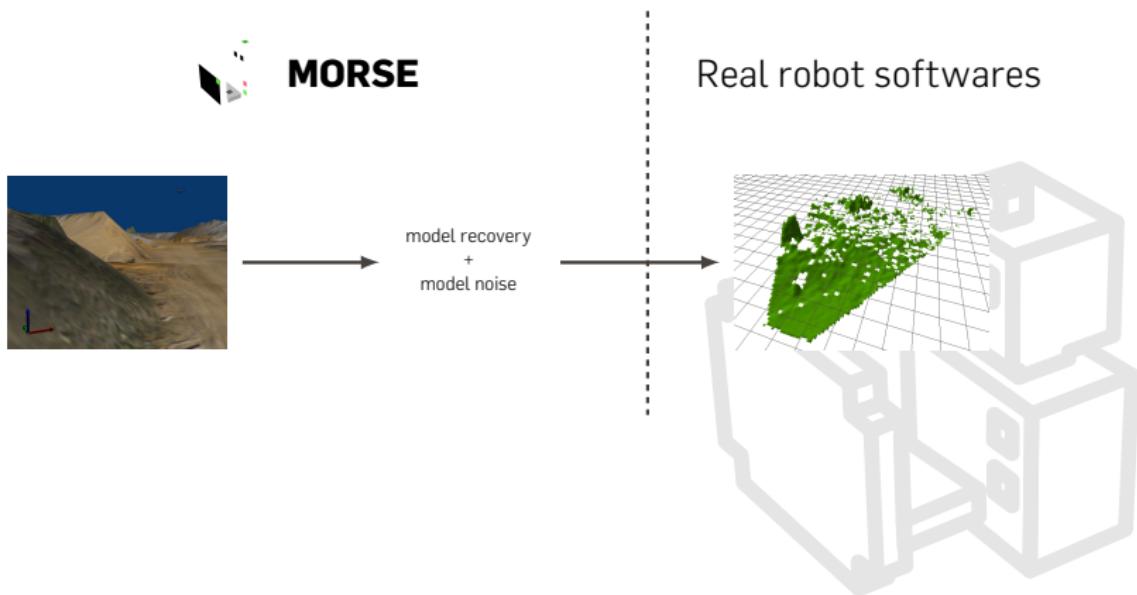
LEVELS OF ABSTRACTION



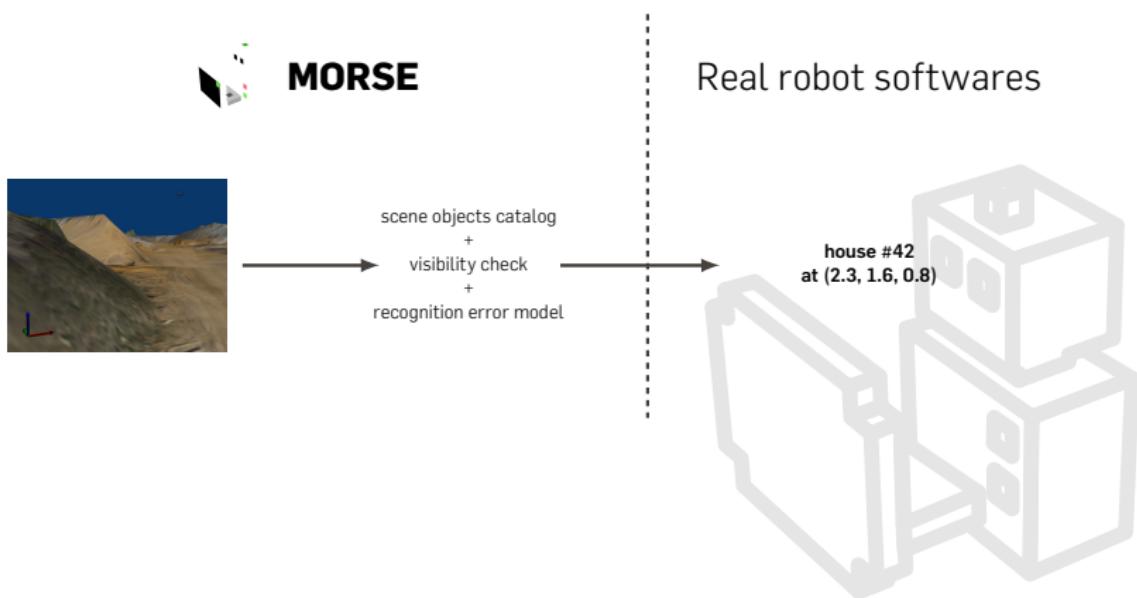
LEVELS OF ABSTRACTION



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LEVELS OF ABSTRACTION



```
1 from random import uniform
2 from morse.builder import *
3
4 robot = PR2()
5
6 for h in range(30):
7     human = Human()
8     human.translate(
9         uniform(-5, 5),
10        uniform(-5, 5),
11        0)
12
13     human.rotate(
14         0,
15         0,
16         uniform(0, 360))
17
18 env = Environment('sandbox')
```





Not there yet...

SIMULATING HRI

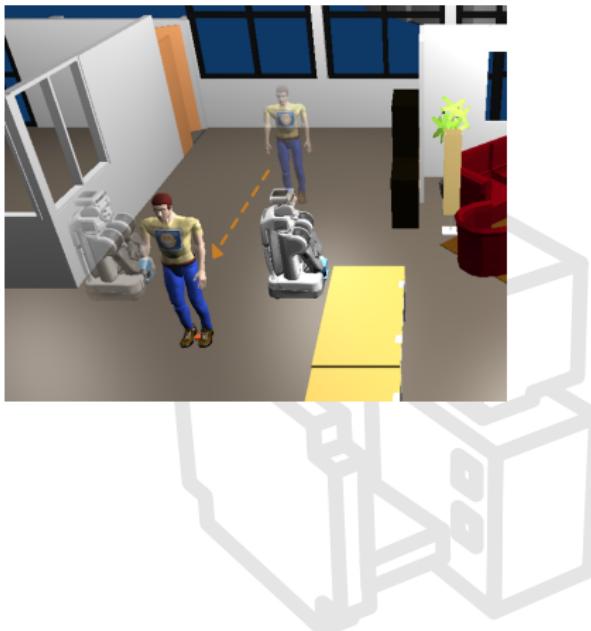
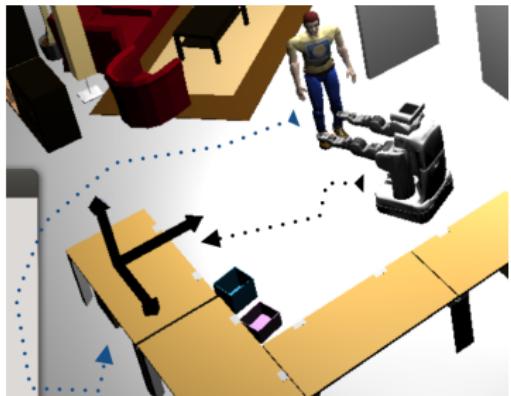
SITUATION ASSESSMENT WITH HUMAN



LARGE SCENARII



REFINING ALGORITHMS



BENEFITS

Repeatable: fine for benchmarks, regression tests,

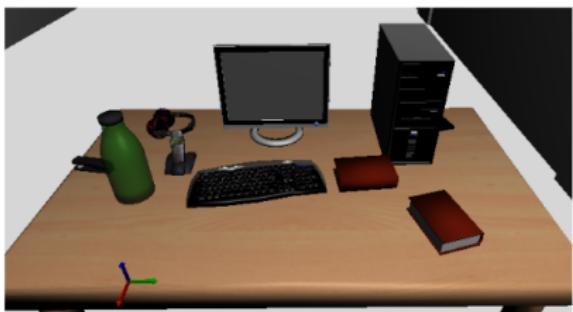
Abstraction levels: simulate only what is needed,

Computer game-style, tests can be carried by one researcher alone: support iterative design and implementation,

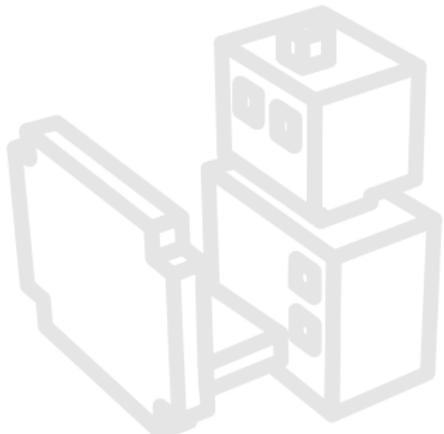


LESS USUAL USE-CASES

AUTOMATIC HUMAN-LIKE SCENE GENERATION



CONTINUOUS INTEGRATION AND HRI



WHAT NEXT?



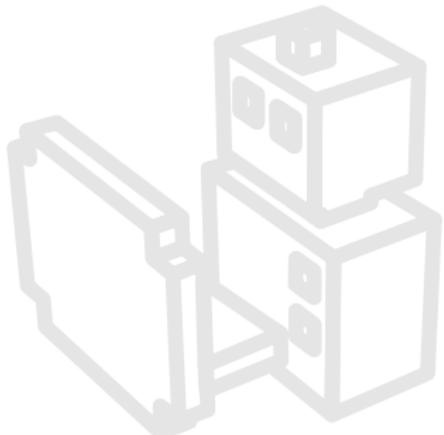
Soon there?

MAKEHUMAN INTEGRATION



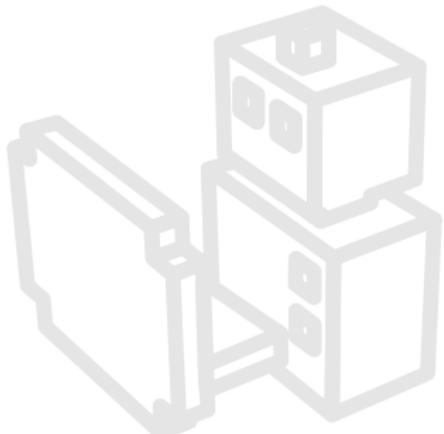
WHAT NEXT?

Autonomous navigation of humans



WHAT NEXT?

Autonomous navigation of humans
Crowd simulation

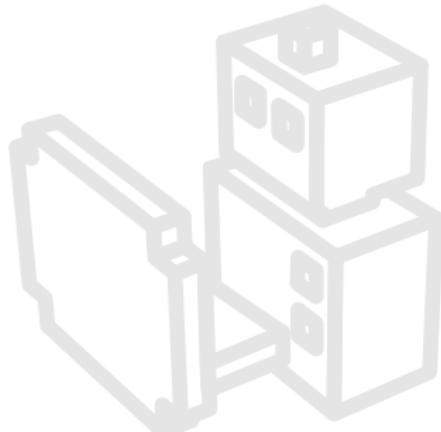


WHAT NEXT?

Autonomous navigation of humans

Crowd simulation

Better library of motions (walk cycles, pick/place, emotions...)



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Autonomous navigation of humans

Crowd simulation

Better library of motions (walk cycles, pick/place, emotions...)

Open "HRI" issues on GitHub:

<https://github.com/morse-simulator/morse/labels/HRI>





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