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Using developmental learning to improve human-robot interactions

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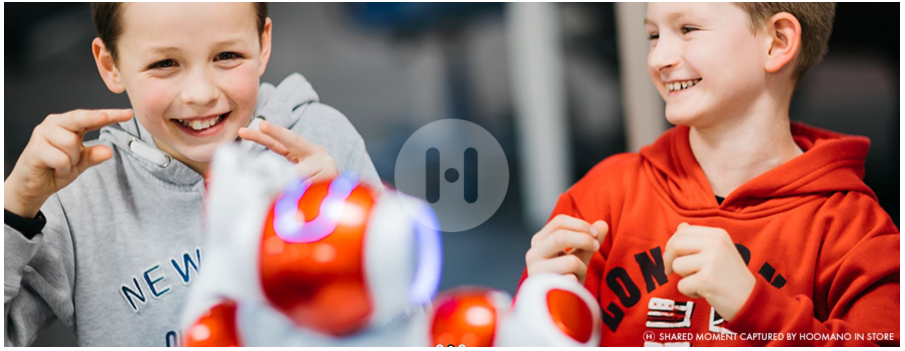
LIRIS + HOOMANO™
INTERACTIVE INTELLIGENCE FOR ROBOTS

LIRIS and Hoomano: two complementary approaches

LIRIS: computer science Lab. SMA group: artificial intelligence and constructivist learning.

Hoomano: 3.5 years of experience in **developing** applications for social robots and **experimentations** with end-users.



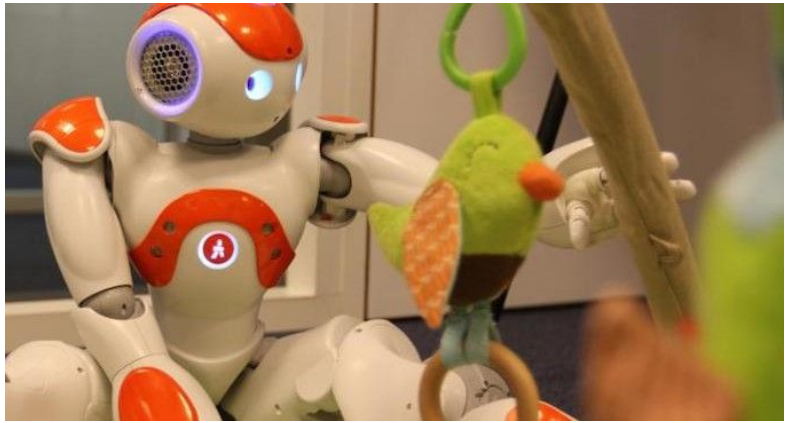
What is Developmental Learning (DL)?

Bio-inspired

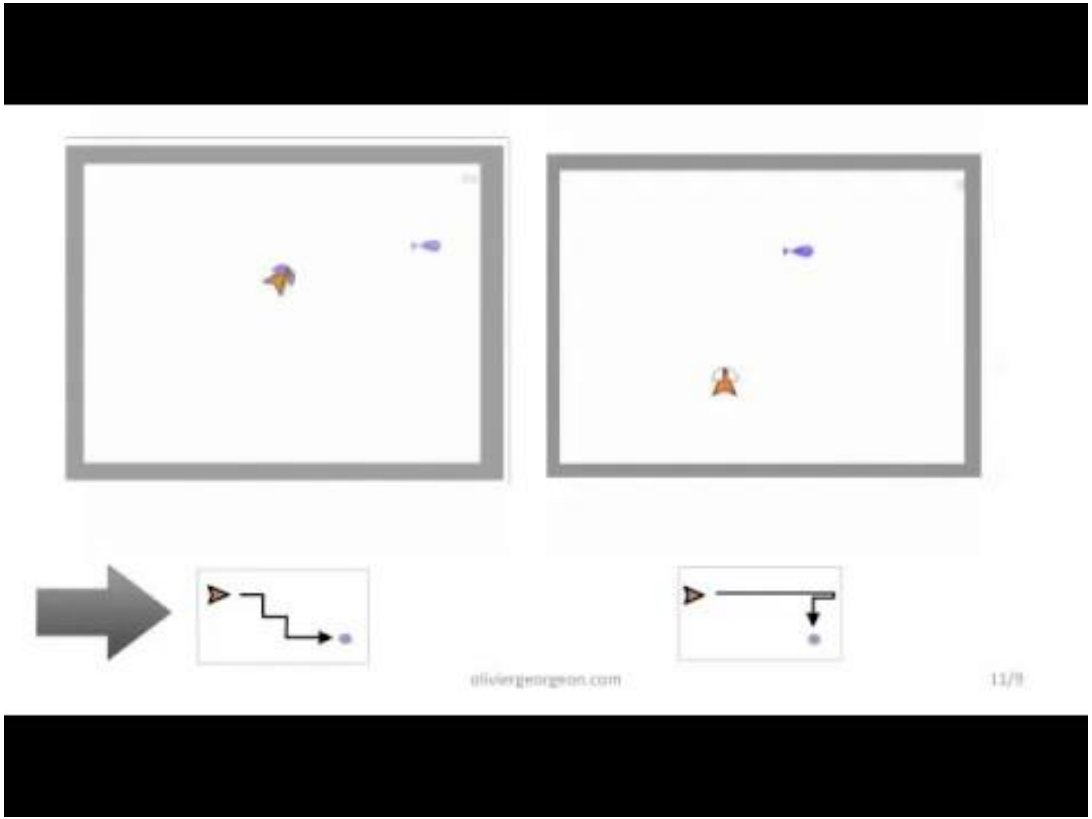
No prior modelisation of the environment

Learning interaction regularities

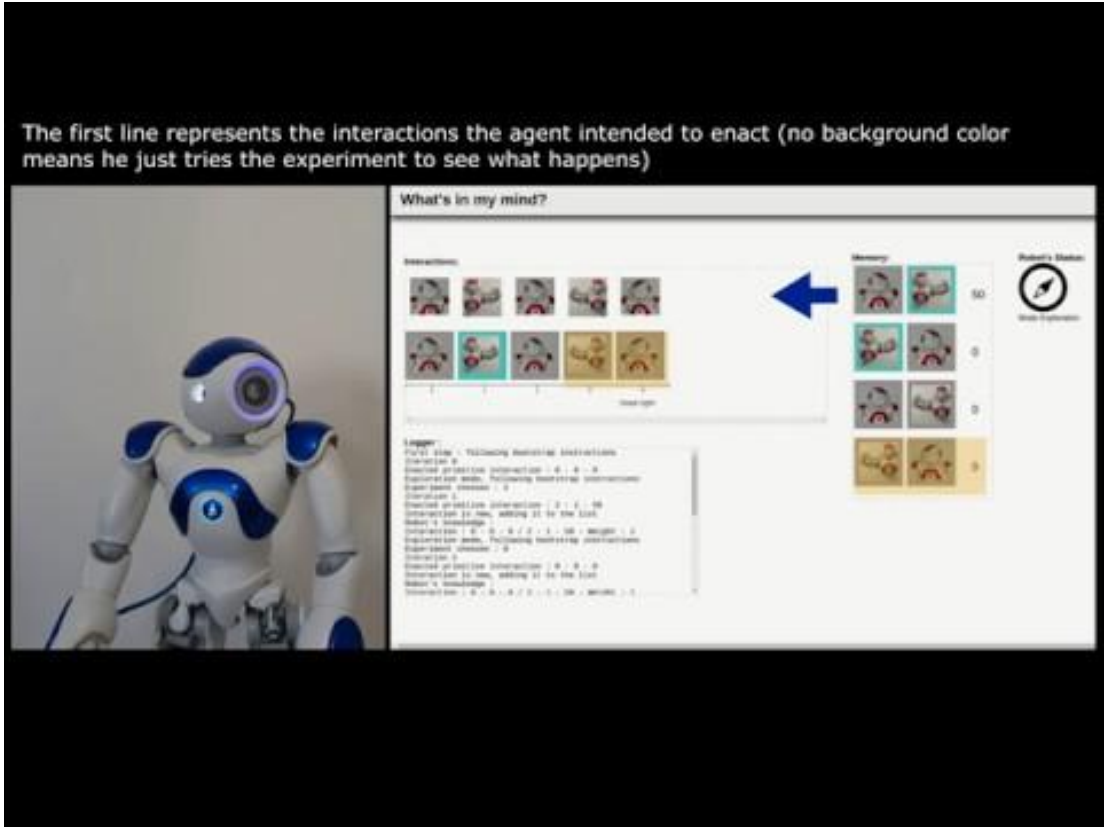
Intrinsic motivation, curiosity



Developmental learning as a clue to develop unique personalities for agents



Implementing rudimentary constructivist algorithms in Social Robots: the reality gap!



Using DL to learn interaction preferences

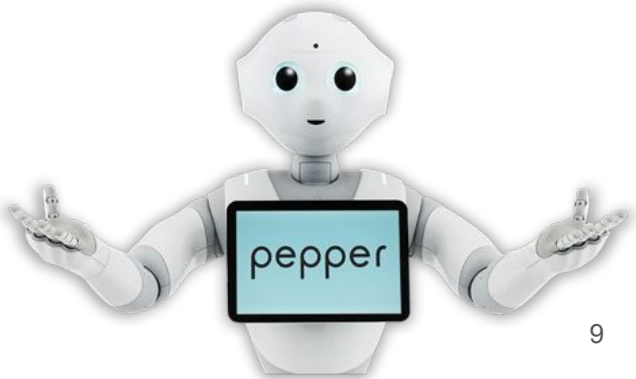
Ongoing work

DQN to adapt gestures to dialog content

Ongoing internship:

How to learn appropriate gestures (animations) as co-verbal information depending on a textual content?

- How to map “sentiment” and “gesture” without prior representation?
- How to gather feedback from users on the mapping quality?
- What are the other possible use-cases?



Multimodal learning with robotic data

Ongoing internship:

How to use multimodal learning with robotic data to improve awareness of robots?

- How to choose the data to combine?
- How to deal with poor quality of some data?
- What are the possible use-cases?
- What methodology to compare the architectures?

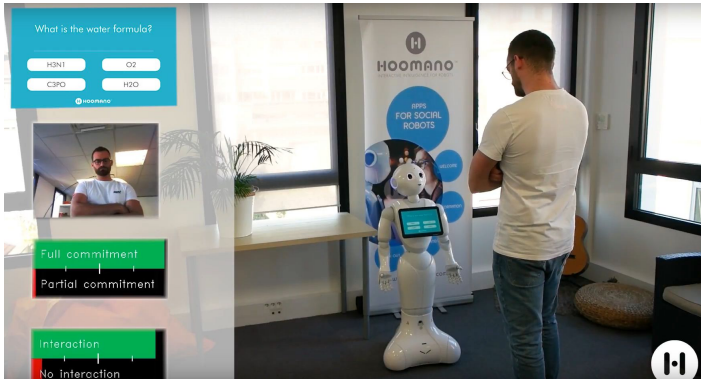
Modeling empathy with a focus on interaction

Ongoing PhD thesis:

Empathic Responses by Social-Robots in Human-Robot Interactions Using Developmental Learning

Experimentations in cognitive sciences:

How to measure the quality of an empathic response during a medium-term interaction - towards news tools inspired from psychology



What are we looking for?

Talents

The team is composed of interns, engineers, professors, PhD and post-docs… Join us!

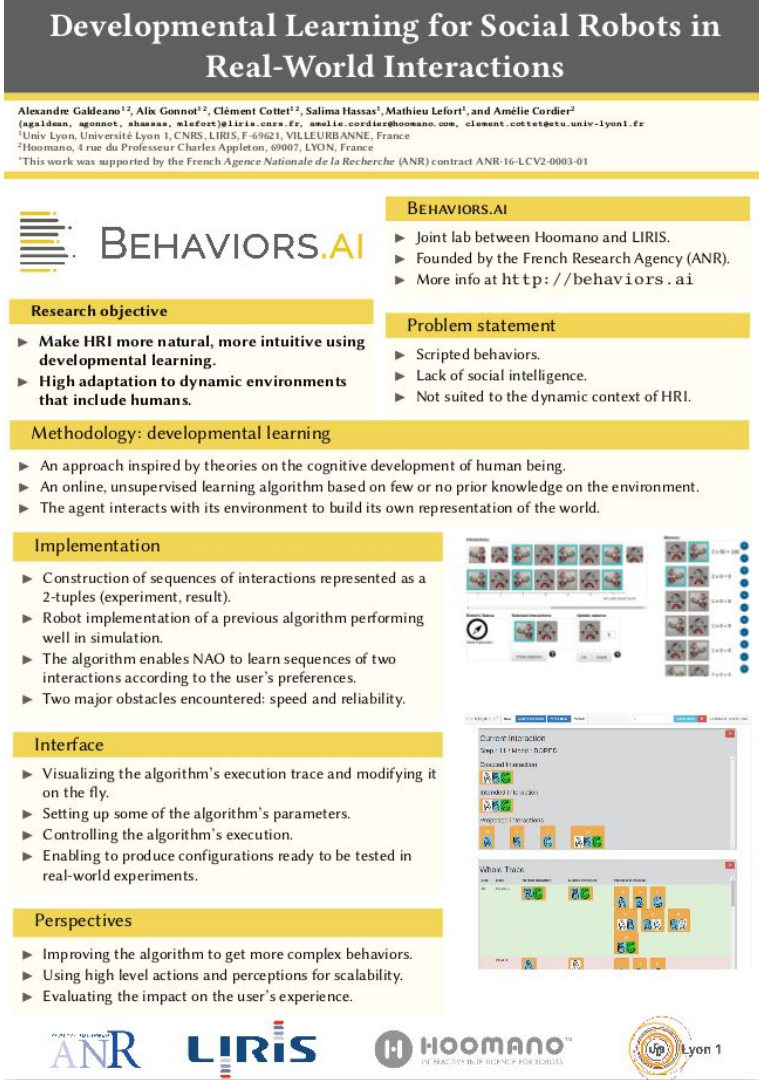
Collaborations / partnerships

We are looking to extend our research and experiments fields…

And… any advice!

Publication

Developmental Learning for Social Robots in Real-World Interactions. Alexandre Galdeano, Alix Gonnot, Clément Cottet, Salima Hassas, Mathieu Lefort, Amélie Cordier. Human Robot Interactions (HRI). 2018.



Thank you!