



ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

You're Doing It Wrong!

Studying Unexpected Behaviors in Child-Robot Interaction

ICSR 2015 – Séverin Lemaignan, Julia Fink, Francesco Mondada, Pierre Dillenbourg

Presented by Alexis Jacq

Computer-Human Interaction
for Learning and Instruction **EPFL**



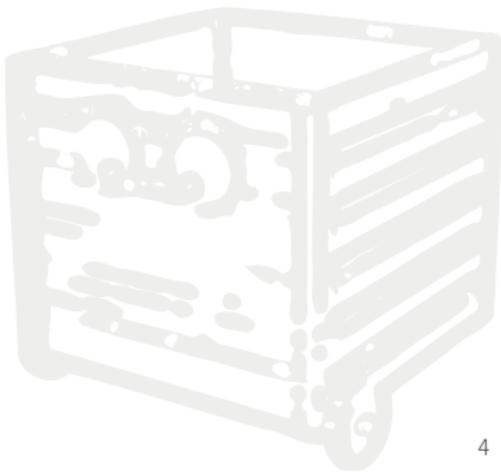
WHAT HAPPEN WHEN A ROBOT DOES
NOT OBEY?

NO, I DON'T WANT YOUR TILE!



TWO HYPOTHESES

1/ A robot that mis-behaves from time to time is more engaging



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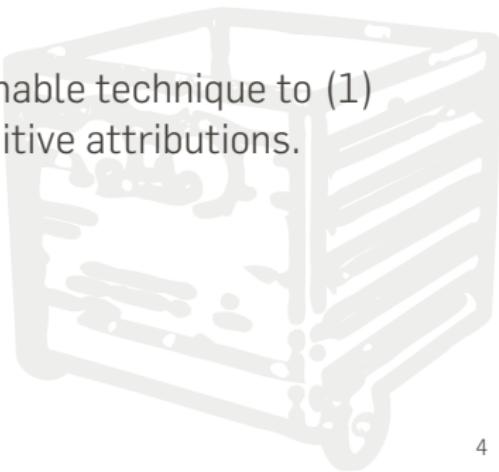
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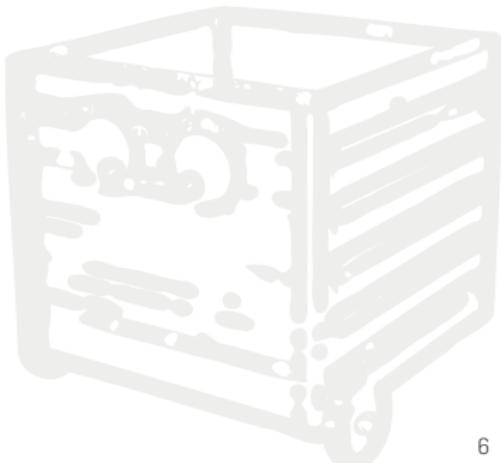
If that's indeed the case, we gain an actionable technique to (1) sustain engagement, (2) influence on cognitive attributions.



UNEXPECTED BEHAVIOUR, YOU SAID?

DESIGN OF THREE BEHAVIOURS

- 1/ the robot get **LOST**, for no visible reason;
- 2/ the robot **DISOBEY**;
- 3/ the robot makes a **MISTAKE**.



LOST CONDITION

Induce the perception of a contingent malfunction
(My robot has a **bug!**)



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Hypothesis: decreased attribution of human-likeness

DISOBEY CONDITION

Induce the perception of a robot's **own will**



DISOBEY CONDITION

Induce the perception of a robot's **own will**



Hypothesis: increased attribution of human-likeness

MISTAKE CONDITION

The robot goes wrong, but recognizes the error and repairs.

To err is human! The robot is aware of its own state (introspection) and of the expected state of interaction.



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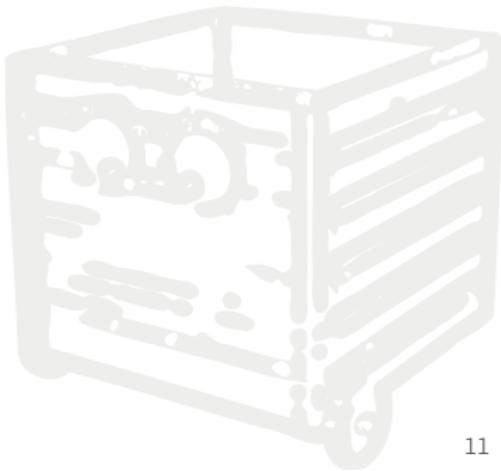
TECHNICAL CHALLENGES

Get a child-proof robot to write...



TECHNICAL CHALLENGES

Get a child-proof robot to write...
...badly...



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Make it able to learn...



TECHNICAL CHALLENGES

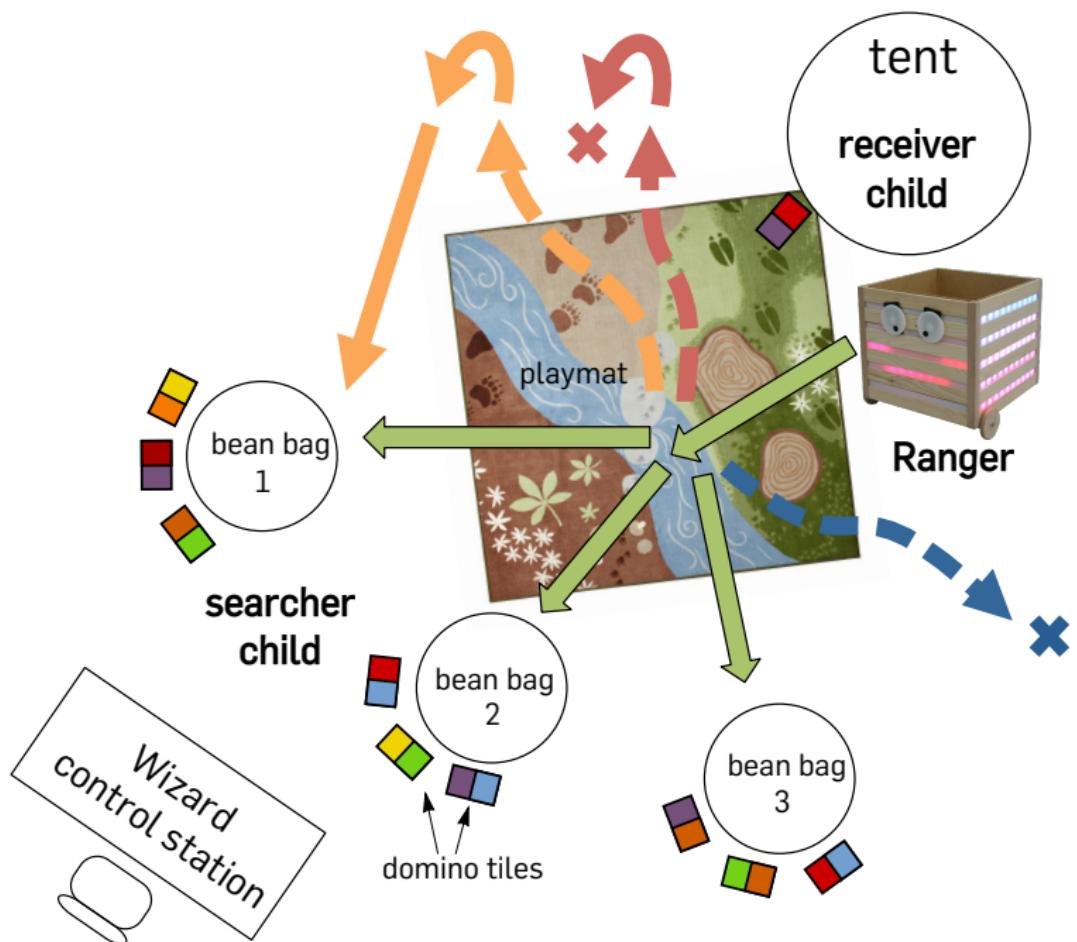
Get a child-proof robot to write...

...badly...

Make it able to learn...

...with the help of children





GENERATING BAD LETTERS

Insight: PCA on a database of hand-written letters to extract characteristic features



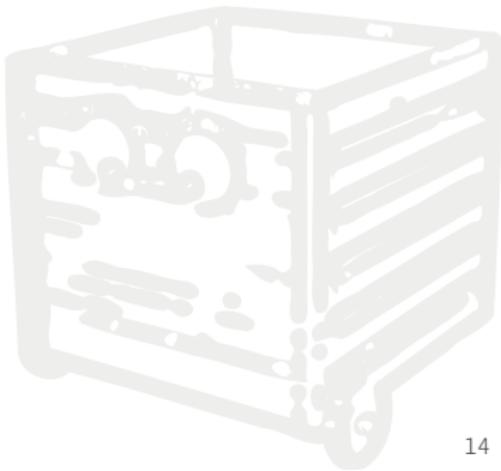
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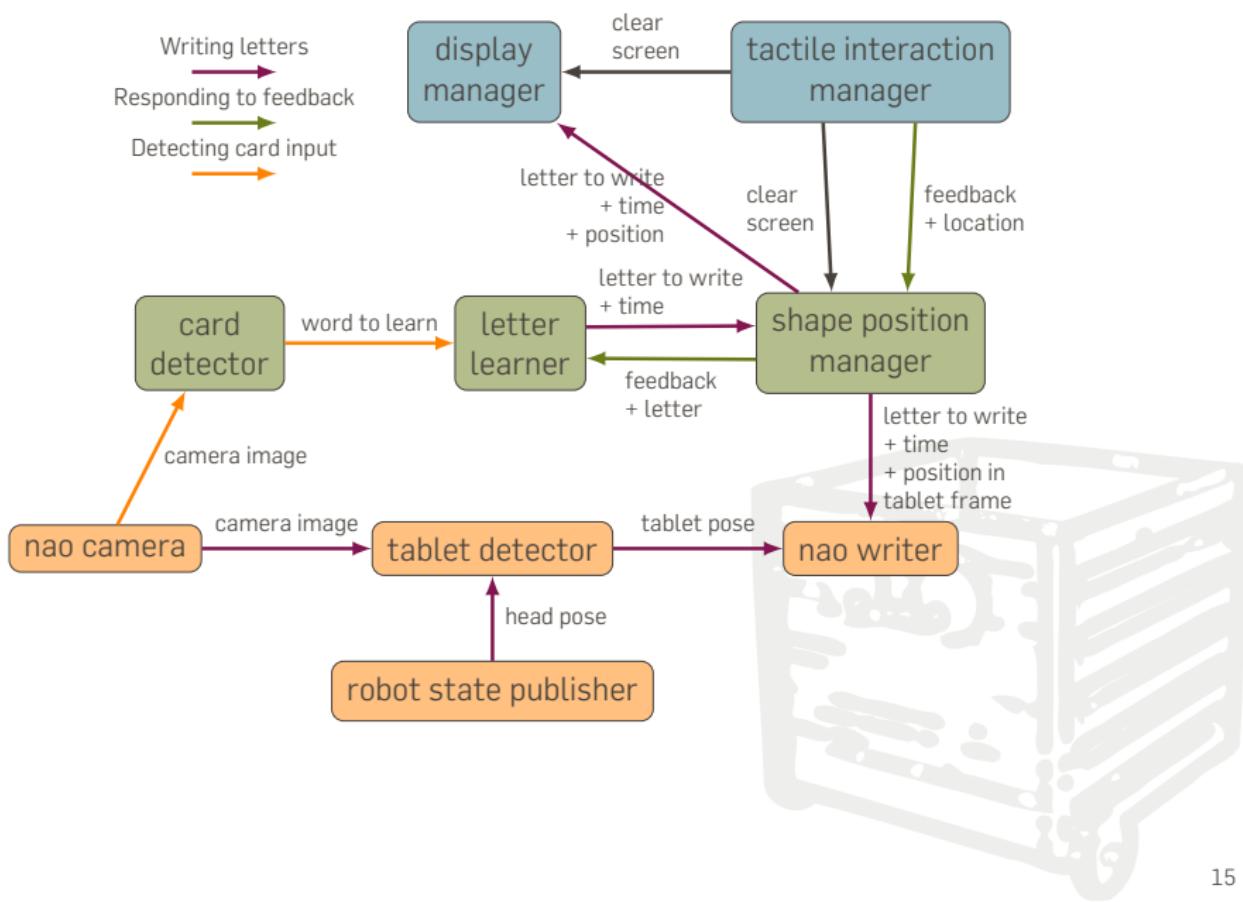


LEARNING FROM DEMONSTRATION



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ON THE FIELD

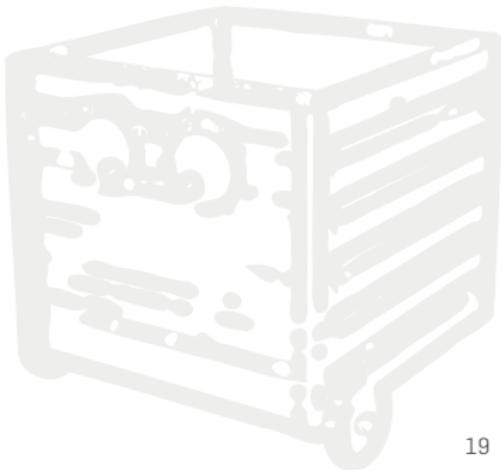




A NEW ROLE?

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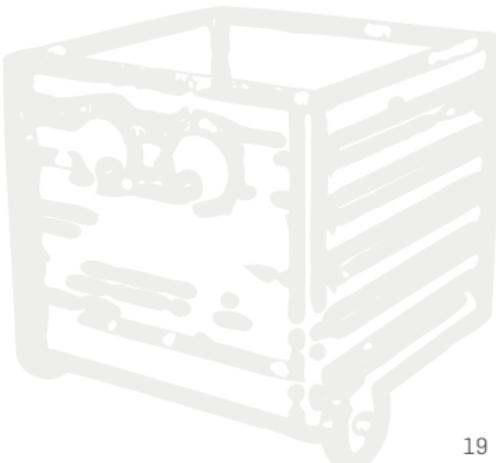
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The robot as 'cognitive agent' is key here (Protégé effect, metacognition)

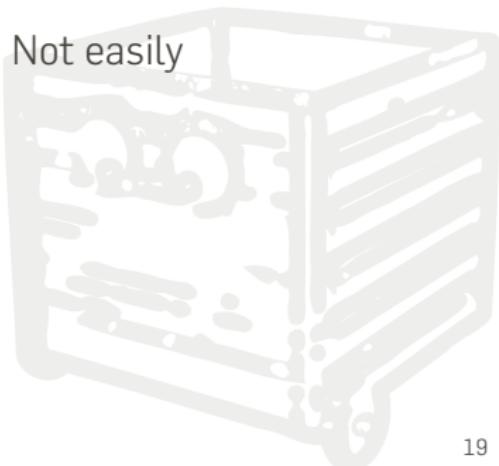


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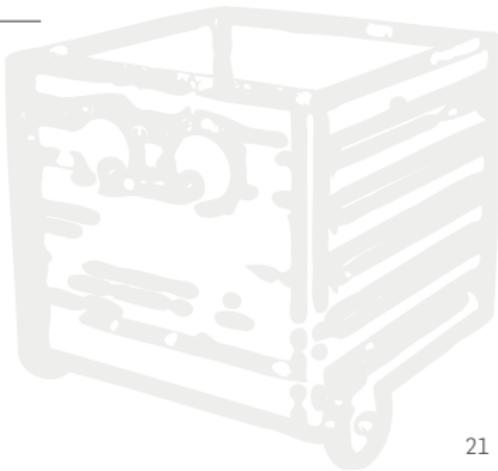
Could we replace it by someone else? Not easily



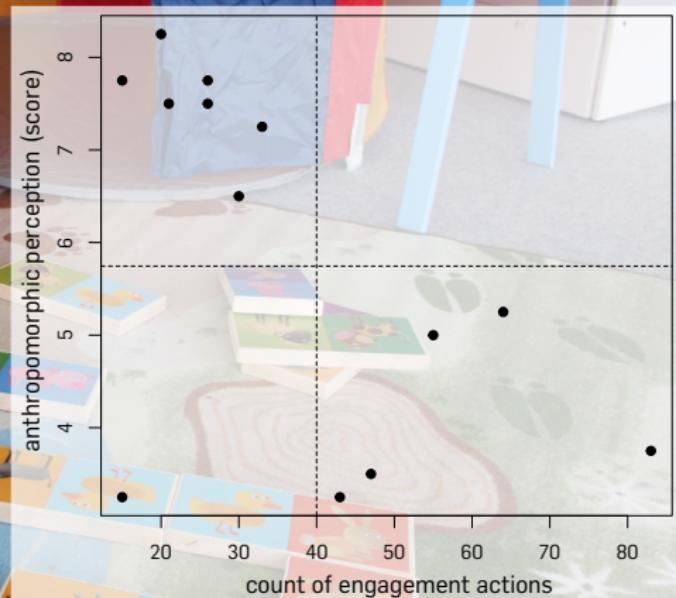
TAKE HOME MESSAGE?

UNEXPECTED BEHAVIOURS

	Unplanned by the robot	Planned by the robot
Perceived as non- intentional	A	B
Perceived as intentional	C	D



ANTHROPOMORPHISM != ENGAGEMENT



Thank you!

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