

AI for learning humans through virtual worlds



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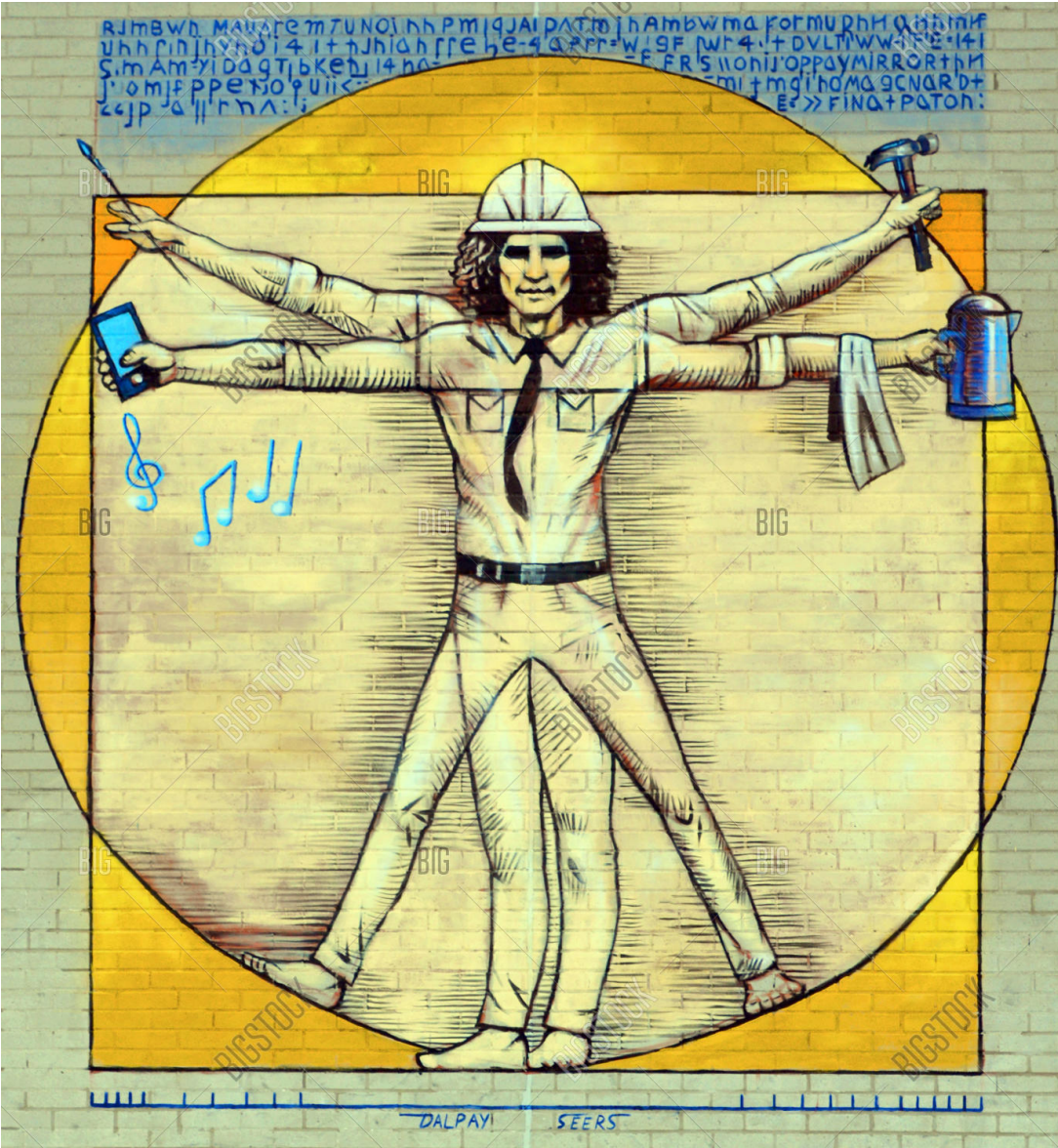
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AI Academy



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- Are human behaviors predictable?
- At which level:
- Personal/Individual
- Social

"Human nature is always interesting... And it's curious to see how certain types always tend to act in exactly the same way." - Miss Marple, *The Herb of Death*, Pg. 167"

— Agatha Christie, **The Thirteen Problems**

- It means there exist recurrent behavioral patterns
- AI can observe those patterns understand and anticipate them
- Modern Vitruvian man resides in **visual data** on human behaviors

- Are human behaviors predictable?
- At which level:

Observing humans in complex scenarios is difficult
Data must be annotated
Privacy issues in public places and workplace

Which kind of data are suitable for AI to learn from?

data on human behaviors

Learning human collective behaviors from virtual worlds



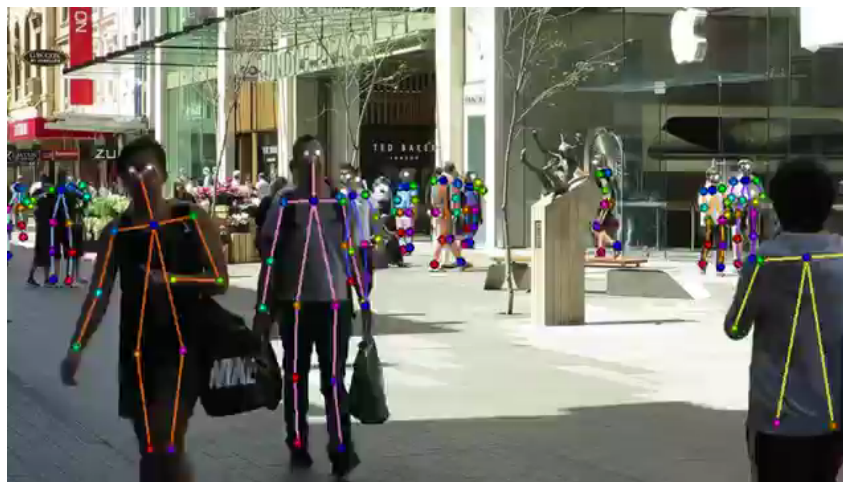
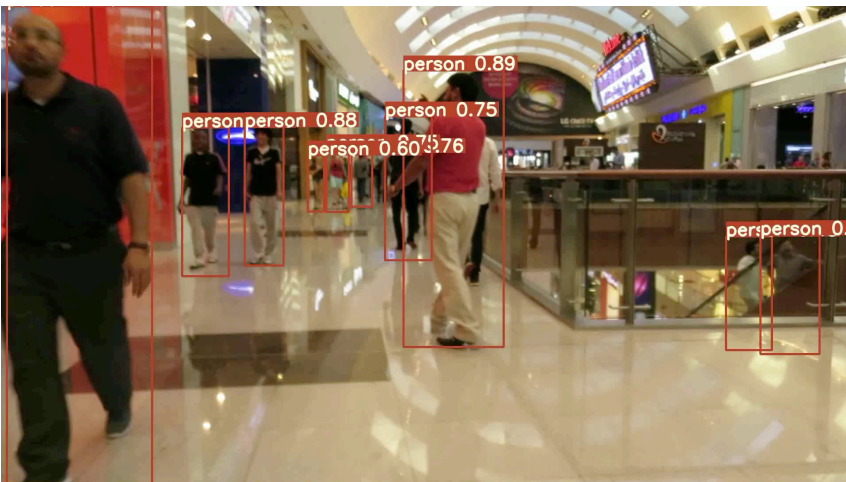
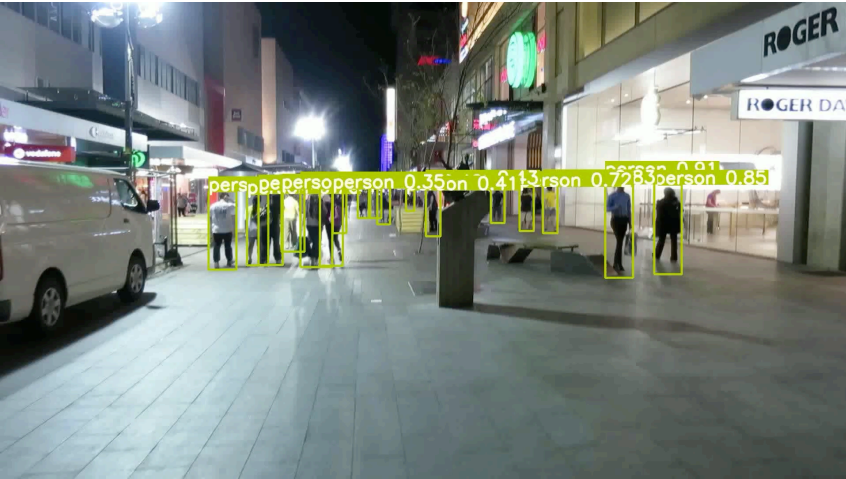
Make use of CG environment to learn on real ones

Use CG environment as a:

- **Mass Data Producer**
- Automatic annotator provider
- **No privacy issues**
- Can simulate dangerous events



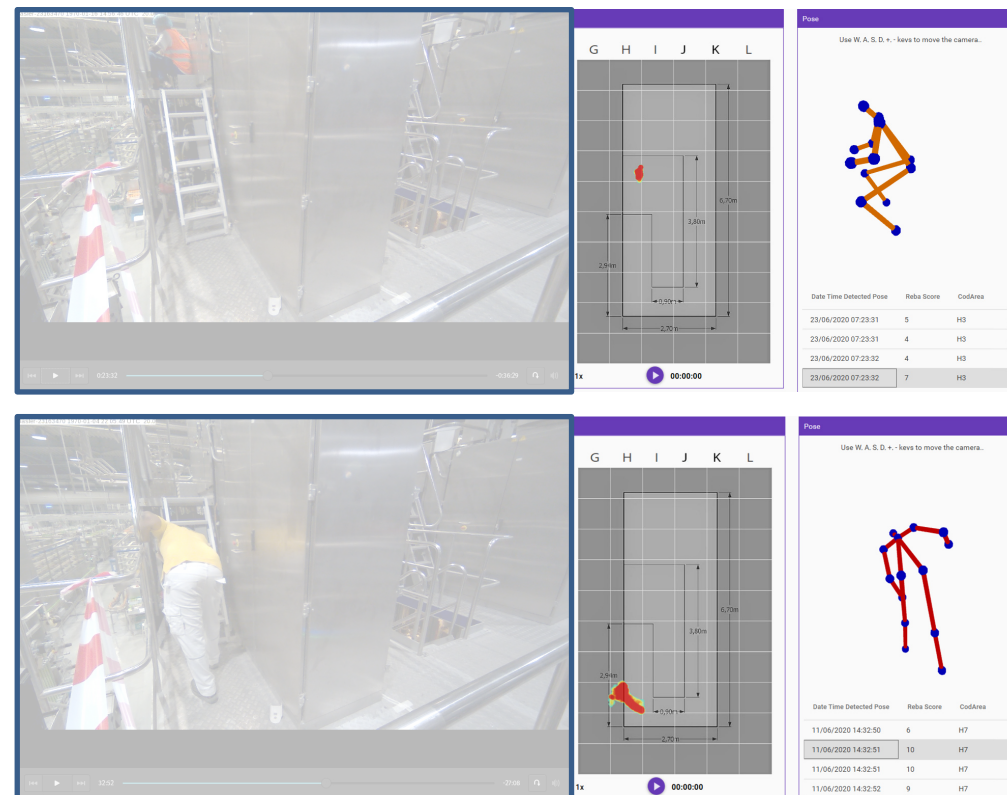
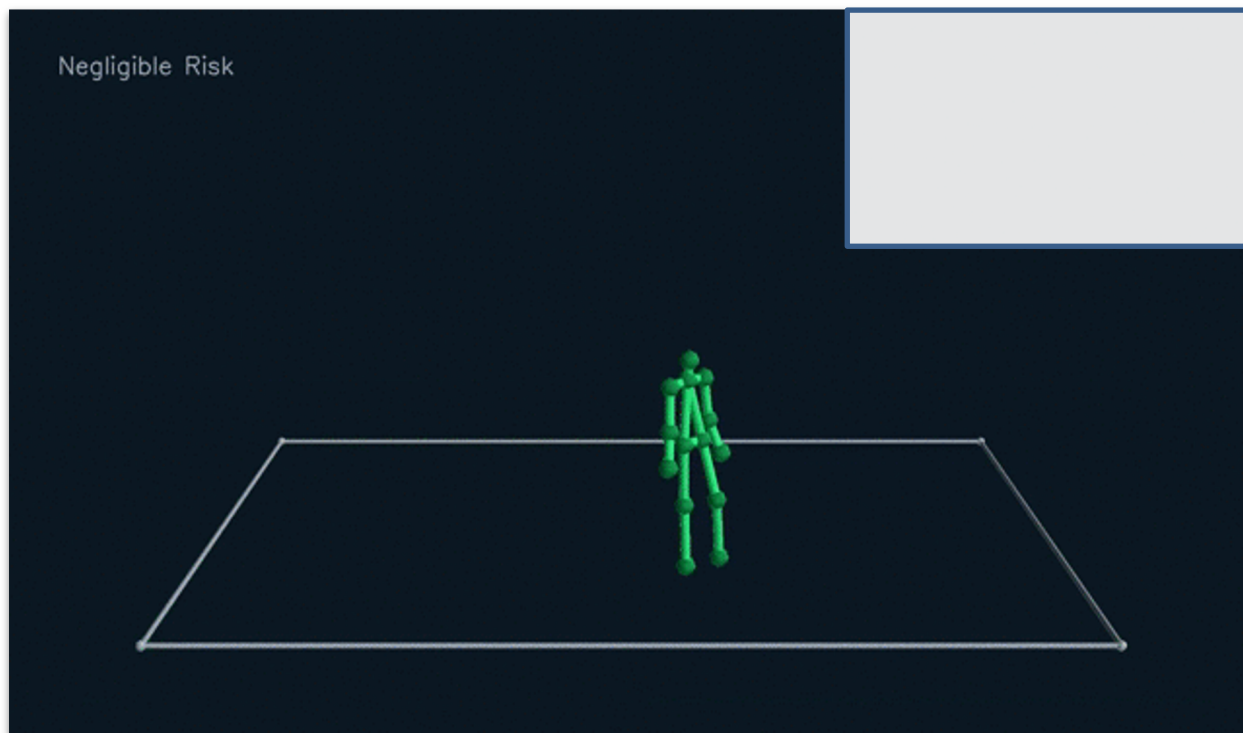
*Activity Funded by Emilia Romagna – JUMP project, Italian MIUR PRIN Project COSMOS, PREVUE
EU Project: INSECTT and ArrowheadTools*



Video1.m4v

Can virtual data generalize to different environments?

Can we understand how people work and interact with machines?



Machines of the future can reconfigure themselves with the confort of operators as a focus.

Activity in conjunction with Tetra Pak (Automation & Digital) (Modena Lab) Emilia Romagna

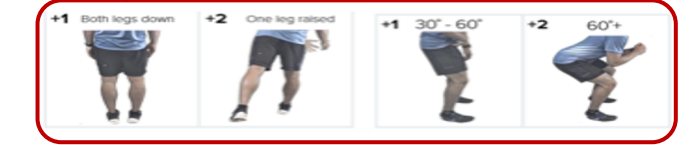
Negligible Risk



Head



Legs



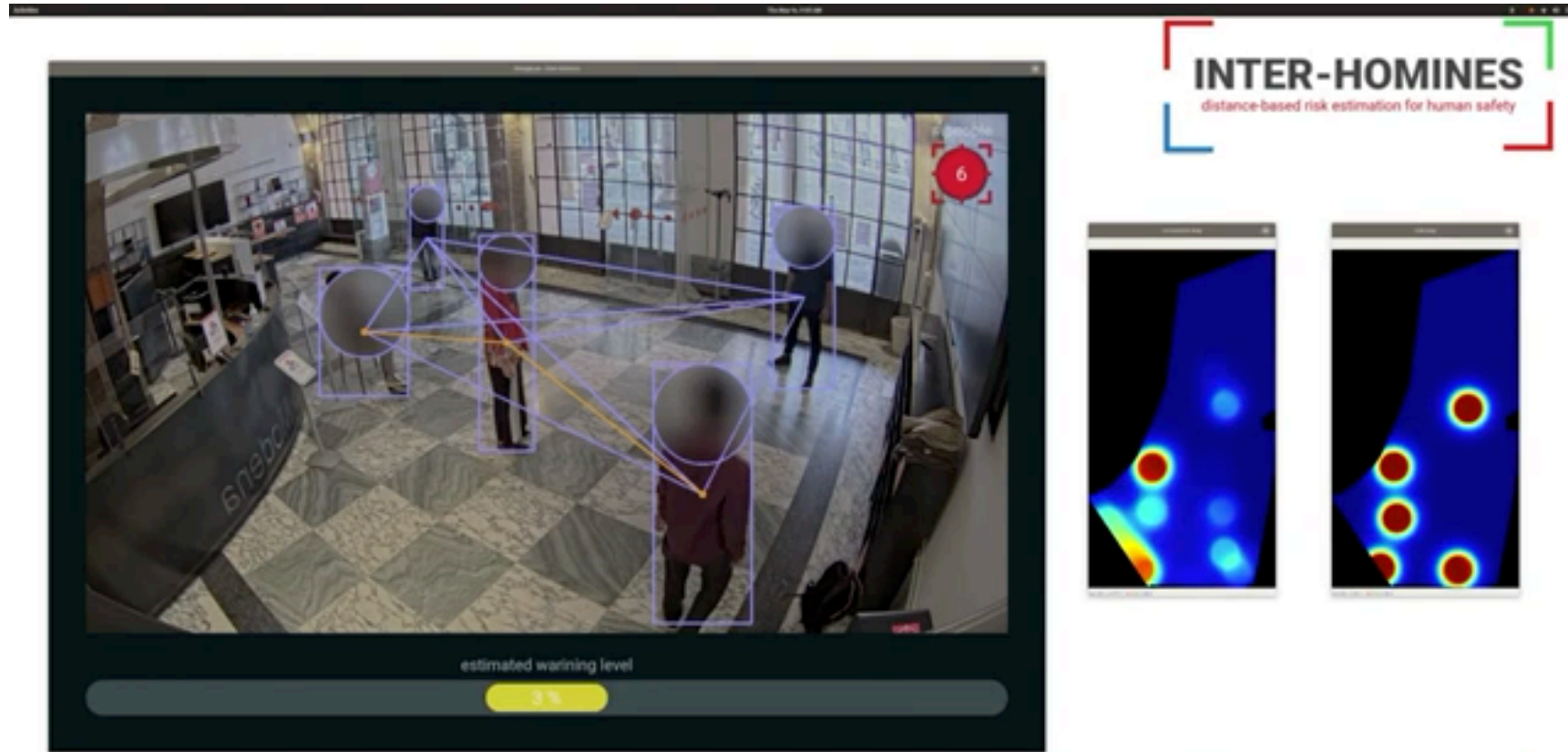
Negligible Risk

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neck_side: False
trunk_angle: 4.56
trunk_side: False
legs_walking: False
legs_angle: 6.78
load: 0.0
upper_arm_angle: 0.6
shoulder_raised: False
arm_abducted: False
leaning: False
lower_arm_angle: 11.48



[video2.m4v](#)

Human behaviors during Covid outbreak: Inter Homines



- Using cameras and AI to **detect interpersonal distances**
- **Sophisticated behavior** analysis models for system robustness and **risk evaluation**

City: Future cities can understand anticipate and help people

- Ensure a major sense of safety
- Help impaired and fragile subjects
- Design new and interactive services

Industry:

- Understand the effort of operators
- Help designing more efficient machines (human tailored)
- Better designing human machine interaction during production cycles

We must work to avoid a «Mark Twained» Artificial Intelligence by **centering future AI around people**

“The more I learn about people, the more I like my dog.” Mark Twain

Thank you for your attention

More on us

Research:

AlmageLab Research Group: <http://aimagelab.unimore.it>

Ellis Unit UNIMORE: <https://ellis.eu/units/modena-unimore>

Tech Transfer and Life Long Learning:

AI Academy UNIMORE: <http://aiacademy.unimore.it/>

